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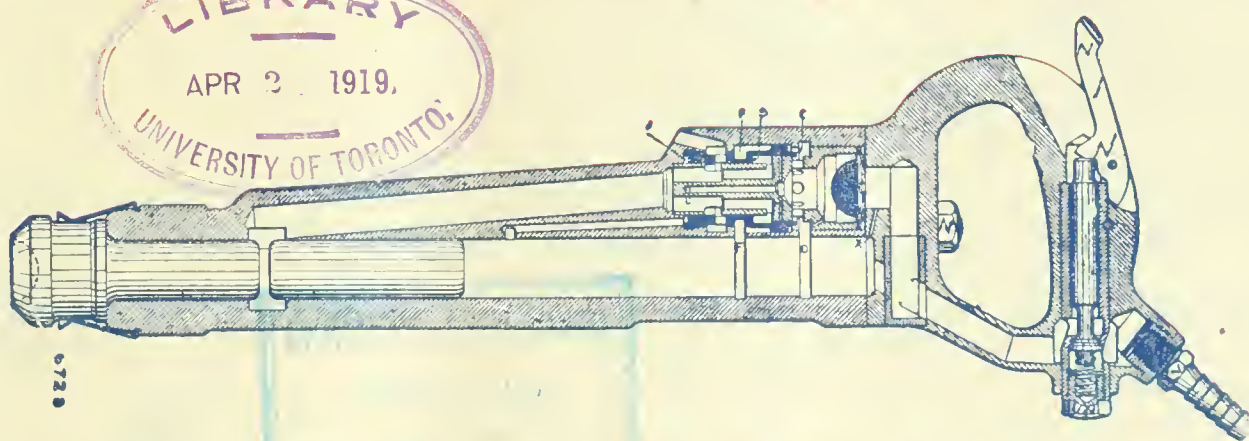
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TO

THE SOUTH AFRICAN MINING & ENGINEERING JOURNAL

JOHANNESBURG.

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Part II.

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The Kalahari Lakes Scheme.

In our next issue will appear the first instalment of the valuable series of articles by Prof. Schwartz on the big project he advocates in regard to Lake Ngami. Prof. Schwartz's articles will be illustrated and will be accompanied by a map of the areas in question.

* * * *

The Geological Society of South Africa.

The twenty-third annual general meeting of members of the Geological Society of South Africa will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday, 17th March, 1919, at 8.15 p.m. The business before the meeting is as follows: (1) To receive and consider the annual report and statement of accounts for the year ending the 31st December, 1918. (2) To elect twelve members of Council in place of Dr. Geo. S. Corstorphine (deceased), and Messrs. L. C. de Villiers, P. Ross Frames, J. J. Garrard, W. J. Gau, W. G. Holford, C. Baring Horwood, C. E. Knecht, T. N. Leslie, D. P. McDonald, A. R. Sawyer, and P. A. Wagner, who retire under the rules of the Society. (3) To elect a president, vice-presidents and honorary secretary for the ensuing year. (4) To elect an auditor for the ensuing year. Mr. H. B. Maufe will deliver his presidential address.

* * * *

The Position of Glynn's Lydenburg.

The Glynn's Lydenburg directors' interim report for the three months ended 31st January, 1919, states that in Compound Hill 90 feet were driven, 84 of which were on reef. 160 feet were sampled, showing 120 feet payable of an average value of 12.1 dwt. over 24.5 inches. In addition 263 feet were driven, risen and sunk in developed ground in Compound Hill, of which 171 feet were on reef, 300 feet sampled and 260 feet payable of an average value of 17.5 dwt. over 124.4 inches. In the Werf Mynpacht 57 feet were driven, risen and sunk in developed ground, of which 30 feet were on reef, but no samples were taken. The footage sampled shows an excess over the footage driven, risen and sunk owing to the sampling of October during the quarter. In the reduction works the ore received from mine was 4,634 tons; tonnage crushed, 6,642 tons; number of stamps operating, 10; number of tube mills operating, 1; value of ore before crushing, 9.2 dwt.; total yield, 1,757.474 oz. fine gold; total yield per ton, 7.572 dwt. Mining operations for the quarter were seriously handicapped for want of labour. Mining was resumed with 30 boys on the 5th November, and operations were slowly extended as labour strength increased. Very little development could be done, most of the available labour being taken up in stoping operations. No. 3 south drive, off No. 9, Compound Hill, was kept going, as well as the opening up and dewatering of the Werf Mynpacht. The drainage drive was completed and put into commission. The work of re-opening the Werf Mine is now proceeding satisfactorily. 72 per cent. of our pre-epidemic number of boys are now working, and the number is steadily increasing. Two new slimes tanks have been erected, to enable the slimes to be treated more efficiently. Rainfall for the quarter was 19.67 inches on 56 days, as against 41.59 inches on 60 days for the corresponding quarter last year. Dividend No. 35 of 2½ per cent. was declared, payable to shareholders registered at 31st January, 1919. Warrants will be issued early in March, as soon as the final returns from London are received.

* * * *

Simmer Deep Finances.

Meetings of the debenture holders of Simmer Deep, Ltd., were held on the 31st January last in London to consider resolutions for the creation of £150,000 7 p.c. prior lien debenture stock, the subscription of two-thirds of which has already been provisionally underwritten by the Consolidated Gold Fields of South Africa. The directors explained that owing to unavoidable causes—mainly to a further depletion of the native labour supply as a result of

the influenza epidemic—the provision of further funds had become urgent. After full discussion it has been decided to recommend continuing operations, provided that financial arrangements can be made for six months' requirements. The engineers estimate that prospective loss on working, together with capital and other expenditure, calls for the provision of £30,000 by the end of January last and a total of £65,000 by the end of June, 1919. They anticipate material improvement in the native labour and reduced cost of stores in three months' time, and as ore developments remain satisfactory the directors believe that the provision of these funds may enable the company to tide over its present difficulties. Should the issue of prior lien debenture stock be duly sanctioned, it will be offered in the first instance to the first and second debenture-holders for subscription.

* * * *

A Cold Pool!

Washington despatches state that plans are well advanced for the safeguarding of the foreign exchange markets against future chaotic conditions, such as eventuated during the war. This is to be done by establishing among the Allied nations an international gold pool of about \$500,000,000. According to the New York correspondent of the *Daily Telegraph*, bankers there agree that "such a pool will serve to stabilise foreign exchange rates quite effectively, and thereby promote international trade. It will also abolish large profits in exchange, without, however, depriving the banker of his legitimate profit." This scheme is evidently the one referred to by Senator Owen (the chairman of the United States Senate Committee on Banking and Currency) in a leading article written by him on January 1 last. Senator Owen said: "I have greatly desired to see created a Federal Reserve foreign bank, which would establish a gold clearing fund on both sides of the Atlantic, and keep the pound sterling and the dollar, between the United States and Great Britain, at absolute par. This would be of service to those engaged in commerce, and enable them to avoid the fluctuations of exchange. Such a measure has the approval of the Comptroller of the Currency and of President Wilson, but it has not yet crystallised into law."

* * * *

The Railway Budget.

From Mr. Burton's speech on the Railway Budget, we learn that the current year, ending on March 31st, is expected to show a deficit of £1,062,000 on the joint account. The expenditure has totalled, or will have totalled by March 31, £18,074,000, and the revenue is expected to yield £17,012,000, this amount including the surplus of £37,000 carried over from last year. Mr. Burton gave figures showing how heavily the epidemic had hit the railways on both sides of the account; it increased expenditure by over £100,000 and it reduced earnings by about £560,000. None the less the actual revenue of the year may be expected to exceed the original estimate by £822,000. In other words, the deficit is less than was expected. Passenger traffic has enormously increased. Goods and minerals, other than coal, have also made a yield far in excess of the estimates, but there has been a considerable shortfall in the coal bunkering business, which is set off on the other hand by an increase in coal exports and in internal coal trade. Our trade prosperity, Mr. Burton emphasises, has been such as many countries, not directly interested in the war, might well envy. Expenditure, of course, has shown a heavy increase. The War Bonus alone has contributed over half-a-million to this growth in our outlay, and there have been other increased charges resulting from improvement in the pay and status of various classes of employees. The actual expenditure has exceeded the Estimate by £714,000. The current year is expected to close, as already explained, with a deficit of £1,062,000. "There is nothing

to be done with this deficit," said Mr. Burton rather sadly, "except to put it down on the Estimates of Expenditure for the coming year." Here he paused for a moment to recapitulate the trying conditions under which the railways have been run for the past five years; a general strike in 1913; a railway strike in 1914; then the war; the drought in 1916; great floods in 1917; and in 1918 the epidemic. He paid a high tribute to the splendid and unflagging services of the Railway staff from highest to lowest, and added a word of appreciation of the tolerance of the South African public, pointing out, however, that on the whole there has not been much cause for grumbling. It is important, for instance, to notice that the surrender of railway revenue, involved in the reduction of rates since the Union, has been greater than the increases imposed. Goods, that is to say, are carried more cheaply to-day than they were at the date of Union. As for passengers, the recent advances have only amounted to 15 per cent., and in most countries the average railway passenger has had to pay increased charges amounting to 30, 40, and even 100 per cent. It is not, however, now proposed to raise the rates in order to meet the deficit.

* * * *

Zaaiplaats: A Quarter's Results.

The Zaaiplaats directors' report for the quarter ended 31st January, 1919, states that the mill ran on 72 days during the quarter, crushing 5,855 short tons, the duty per stamp being 13.7 tons per 24 tons. The output for the quarter amounted to 142 long tons of concentrates, assaying 70.5 per cent. metallic tin. The results of working shows an estimated profit for the quarter of £8,832 14s. 3d., including directors' fees and Government taxes; 71 long tons of refined tin, assaying 99.7 per cent. metallic tin, were produced by the smelter. Capital Expenditure.—The expenditure on capital account amounted to £1,622 7s. 9d., as follows: Machinery and Plant, £1,521 19s. 10d.; Buildings, £100 7s. 11d.; £1,622 7s. 9d. Mining was limited to No. 13 section owing to the shortage of native labour. Developments in this section continue satisfactory, a striking feature being the continued steep dip of the ore bodies. A start was made with the removal of the overburden in the Valley and with the erection of a temporary treatment plant. It is expected that treatment operations will be commenced in March next. During the quarter 5,871 tons of ore were mined and disposed of as follows: Waste sorted, 16 short tons; sent to mill, 5,855 short tons; total, 5,871 short tons. Native Labour.—The loss of labour caused by the epidemic of influenza was not made good until the end of the quarter. The supply is now increasing and promises to be ample for all requirements.

* * * *

Sakalava Oil: A Tale of Misfortunes.

The Sakalava Madagascar Proprietary Oil Fields, Ltd., appears to be once again in trouble, and a reflation of the company is now proposed. It is a good few years now since the flotation of this concern and the first quotation of the shares on the local market, and it still appears to be as problematical as ever whether oil in payable quantities will ever be found on the property or whether shareholders will for all time have to rest content in the knowledge that the seepages are splendid, the indications magnificent, and the potentialities colossal. We do not altogether blame the board. Things have happened in that Island which scarcely were within the board's powers of prevention. The company has indeed had a chequered and unlucky career. It has been buffeted about by storms and tempests, distressed by questions of title, embarrassed by difficult problems of finance, let down by employees, and for ever dogged by the evil genius of the worst of bad luck. The latest proposal is to reflate the concern in Europe, and in this connection the chairman has addressed a circular to shareholders in the course of which he states: After full consideration and an experience of over two years as chairman of the Sakalava Madagascar Oilfields, Ltd., during which time I have had the opportunities of learning conditions, I

have come to the definite conclusion that: The possibilities of finding oil are as good as ever. The prospecting for oil with a limited capital is very unlikely to succeed unless by a lucky chance. The best course is to endeavour to have a re-fotation in Europe to provide for a capital commensurate with the size of the proposition. The time is opportune owing to the necessity for finding fresh supplies of petroleum and the active interest being taken in this direction in Europe. The directors have decided to issue 18,000 shares and to ensure that the Company shall have sufficient funds to carry on until negotiations can be completed, certain of the directors have guaranteed that at least 10,000 of these shares shall be applied for. Work is still going on on the fields, and the last cablegram, received a week ago, gave the information that No. 6 hole had reached a depth of 1,420 feet. The directors, however, consider that as far as possible the expenditure on drilling shall be limited to the funds now on hand and shall cease when these funds are expended and that the money received from the issue of the 18,000 shares shall be used for the purpose of re-fotation and to maintain the licences and the existence of the company until the re-fotation is effected.

* * * *

S.A. Coal for South America.

Apropos of the series of articles on the future of South African coal, appearing in this and recent issues, it is noteworthy that Mr. Zoutendyk, who last year reported for the Union Government on the possibilities of trade between this country and South America, made a very important reference to the subject of the coal trade. At the time of Mr. Zoutendyk's visit there was a coal famine in the Argentine, and in his report he considers it of great importance to South Africa that immediate steps be taken to capture the coal trade not only of the Argentine, but of all the other South American States. He says that all the railways, factories, electric light works, and cold storages are at present using wood fuel. Previously they obtained their supplies of coal from England, but owing to the embargo on the export of coal they were compelled to find a substitute. Attempts to interest the public in South African coal, however, elicited most discouraging replies. Owing to the fact that the few cargoes of South African coal ordered from the Argentine and sent over by private speculators some few years back were of the worst quality, South African coal has acquired an unenviable reputation. It was difficult at first, therefore, to induce people even to listen to anything that might be said in favour of this product. Fortunately, Mr. Zoutendyk had obtained from the South African Railways Administration copies of Government analyses of our coal, and when he showed these to the railway engineers and coal experts of the different shipping companies and the Chief Naval Engineer of the Government, matters began to look more encouraging, and favourable opinions came to be expressed. Mr. Zoutendyk took other steps also to interest the various authorities in South African coal, with the result that the principal interested companies are prepared to try our coal and sign contracts for future shipments. If, Mr. Zoutendyk says, the opportunity now offering is lost, and when British and American coal is once more available, they will not trouble to experiment with a fuel previously condemned by all. Owing, however, to the shortage of bottoms, fabulous prices are being paid for freight between the Argentine and the United States; and it was accordingly impossible to induce ship-owners to turn their attention to South Africa. It is suggested, however, that with coal selling in the Argentine at from £8 to £9 per ton, it would be a good investment for either the Government, or the Coal Owners' Associations in their own interests, to charter or purchase a steamer even at to-day's inflated prices, to carry cargoes of coal as an advertisement to remove the bad impression and thus capture the future coal trade of the South American States. In the Argentine alone six million tons are required annually. The question of return freight, with a little encouragement, is already assured, and Mr. Zoutendyk deals with this subject in another section of his report.

TOPICS OF THE WEEK.

DIAMOND TAXATION AND DIAMOND CUTTING.

MORE than usual interest and importance were attached to the proceedings at the annual meeting of the Premier Diamond Mining Company this year. A full report will be found in another part of this issue, which merits careful study not only by the shareholders but by all students of public finance in the country. Sir Thomas Cullinan presided, and reviewed the successful operations of the year in brief and businesslike fashion. He showed that during the year there was a falling off of about 123,000 in the number of loads treated, owing largely to the abnormally heavy rains in the earlier part of the period, also a shortfall of nearly 5,500 carats as compared with last year; the shortage in carats was more than compensated for by the high price obtained for the diamonds, which, he said, "had reached a point almost equal to the highest price obtained during the history of the company." He declared that the increase in the price of diamonds and the general prosperity of the diamond market were due in a very large measure to the marketing of the produce from the big diamond companies being placed under control, yet satisfactory as the result had been so far, the question arose "Can the position be improved?" The Board was fully alive to that point, and it realised that the restricted output must be so handled that the divisible profits should be equal to, if not greater than, the profits obtained when the company's operations were conducted on a larger scale. To Mr. Ross Frames fell the task of stating the case on behalf of the company *vis à vis* the ever-increasing encroachments of the Government on the company's share of the profits. On the face of it he makes out a very strong case indeed. From a perusal of his speech it will be seen that the Premier Company has, under existing laws, to pay the Government 60 per cent. of its mining profits—under the original contract—plus an export duty of 5 per cent. on the gross value of its product, plus an income tax of 5 per cent. on its profits, plus a dividend tax of $7\frac{1}{2}$ per cent., or in other words 60 per cent. plus 5 per cent. (equal to 8.33 per cent. on profits), plus 5 per cent., plus $7\frac{1}{2}$ per cent., and now it is proposed to double the export duty on the gross value of rough and uncut diamonds. This last is equivalent, on the present ratio of profits, to an additional profit tax of 16.66 per cent. These percentages, of course, are not added together and deducted from the net profits, but each tax is assessed on the balance of profits after deducting the previous tax—for which mercy the company is doubtless duly thankful. These taxes and duty increase the share of the Crown, one of the partners, at the expense of the Premier Company, the other partner. In the caustic words of Mr. Ross Frames, "thus has the Government declared to the world that it regards the Precious Stones Ordinance, 1903, the solemn deed of partnership, a mere 'scrap of paper' to be torn up whenever it requires money." To our mind Mr. Ross Frames stated the case with great moderation, and shareholders in the Premier are clearly suffering under a grievance that grows every year more onerous and unjust. The directors of the company owe it to those with whose interests they are entrusted to keep hammering away at the conscience of the Government and of the public until the wrong is righted. On the subject of a diamond cutting industry, Mr. Ross Frames takes a firm stand in favour of the State itself embarking on the industry. As a member of the Commission on State Mining, Mr. Ross Frames doubtless heard so much of the merits of State enterprise that he is disposed to give it a trial. "I know of no enterprise," he said, "so well and peculiarly suited for the State to undertake as the cutting and polishing of diamonds." Mr. Ross Frames will certainly find little public opposition to his proposal, though it is only fair to point out that the real difficulty may arise when the diamonds are cut. The extra expense involved in exporting the finished article, and the ever-present threat of diamond import taxation in the receiving countries must not be overlooked. At any rate the powerful advocacy of the Managing Director of the Premier Company is likely to give the whole movement for the establishment of the industry in this country a decided fillip.

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THE GREATER HEIDELBERG GOLDFIELDS.—II.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

A Brief History of the Heidelberg Area from 1902 to 1915—Federations, Coronations and Condemnations—The Pricking of the Edenkop Bubble—Heidelberg Relapses into Inactivity—Dr. Hatch's Pronouncement—Dr. Carrick Disagrees—Henderson Supports Hatch—The Far Eastern Rand Piles Up Outputs—The Goldfields and the Sub-Nigel—Interest Revives—Dr. Mellor Delivers his "Classic."

To record the history of the Greater Heidelberg Gold Fields is to lay bare the strata of South African Geologists' lives. Many pronouncements which years ago were regarded as epoch making and indicative of a vast extension to the "legitimate Rand" have been forgotten. Many failures and disappointments are buried beneath the overburden of a couple of decades and an exhumation of these incidents cannot but resurrect a good many painful memories. But an examination of facts and fancies in more or less chronological sequence is necessary in order to arrive at a proper appreciation of the present position in the Heidelberg district and the prospects of proving a substantial extension of our gold fields.

Up to the time of the outbreak of the Anglo-Boer War one Heidelberg company only produced gold and earned dividends—the Nigel. There were numerous flotations, but the Nigel alone made any mark as a producer, and it may be worth remarking that in those days the returns of the Nigel were included amongst the outputs of the Witwatersrand district. Just before the signing of the Vereeniging Treaty, however, the line of reef taken up by the Coronation Syndicate came into prominence. Mr. John Harry Johns' identification of the reefs worked there with the Main Reef series resulted in the booming of the shares and the flotation of many other propositions on the supposed line of the Coronation Reef.

THE REEFS UNDER THE DIABASE.

These concerns called for the serious attention of the *South African Mining Journal*, and anyone who cares to wander through the back volumes of this paper will find much that is instructive and sometimes much that is amusing in regard to geological beliefs that have been tried more or less and found wanting. In the very first issue of the *Journal* published after the war we find the affairs and prospects of the Federation Syndicate dealt with at considerable length. Mr. Minett Frames and Mr. H. D. Griffiths, the geological sponsors of this flotation, formulated the theory that the Coronation Reef does not belong to the Main Reef series, "but that its proper position is among the topmost beds of the Rand and that it will be found in the horizon immediately underlying the amygdaloid." Messrs. Frames and Griffiths correlated the Coronation Reef with the Steyn Estate Reef on the farm Doornkop. This assignation was not, however, to be considered as a reflection on the intrinsic merits of Coronations. Frames and Griffiths, on the contrary, believed that there were highly profitable values to be extracted from the banket beds immediately underlying the amygdaloidal diabase beds which were, and are still, more commonly known as the Elsburg series. The Elsburg Reefs have never been a material factor in Rand gold mining industry, but the Federation Syndicate promoters believed that they had never had a fair trial, and accordingly they acquired options over 25,000 morgen of land in the Heidelberg district with a view to demonstrating the accuracy of the Frames-Griffiths school of thought. The geological premises were backed by a considerable bulk of evidence mainly in the form of reef sections obtained over widely-separated areas and which exhibited similarity of mineralogical structure.

CORONATIONS FALL AND OTHER ATTRACTIONS APPEAR.

It was not until September, 1901, that Dr. Corstorphine pricked the Coronation bubble, and in stating that the reef on Edenkop was not in his opinion on the Main Reef horizon confirmed one item of the stratigraphical fabric upon which Federations went to flotation. But before Coronations fell from the high estate of Main Reef horizon down to the poor level of a problematical series vainly seeking some fairy geological godfather who would re-christen it with a name that would enable it to hold up its head again, much water flowed under the bridges of time. Much money trickled away, too, and was lost in a whirlpool of unproven geological dogma.

It must be recalled that in April, 1904, Dr. Corstorphine issued a report which tentatively supported the pronouncement of Mr. John Harry Johns that Coronation and Main Reefs were identical. "With the steep dip which prevails on Edenkop," wrote Dr. Corstorphine, "the Reef is high enough above these slates (underlying striped slates) to justify its being regarded as on the Main Reef horizon." This remark, coupled with the encountering of profitable values in portions of the Edenkop mine, was quite sufficient to further inflate the value of the Coronation line of propositions and in the earlier part of 1904 there was extraordinary activity in the Heidelberg area. Federations, however, took but little part in this epoch of activity and bounding prices. Shortly after the flotation of Federations in the early part of 1903, public interest seems to have been temporarily deflected to the northern part of the Orange River Colony (as it then was) by the sudden appearance of the Main Reef series in the properties of the Orangia Main Reef and in the valley of the Krommelleboog River with no less a sponsor than the celebrated Dr. Molengraat. Great interest was also evinced at that time in the Gembokfontein strike by the Western Rand Estates. All the while, however, Heidelberg and the districts lying to the south-east were being busily prospected.

Rathbones South African Syndicate and the Mines and Minerals Exploration Syndicate were working on the Heidelberg town lands. The New Colonies and New Transvaal Companies had taken up large areas towards Ermelo. Hex River was being prospected and the Coronation Victory, Coronation Freehold, etc., were supposed to be on the right line of country. A diamond drill was started on Daspoort, and the encountering of good values in the Coronation Mine increased Mr. Carl Hanau's already unbounded optimism.

By the middle of 1904 work was at its zenith, not only along the Edenkop line but also in the subsidiary syncline, Wilgepoort, Daspoort and Tweefontein, etc.

But the authoritative announcement that the Coronation was not on Main Reef horizon and that continuity was not to be expected, coupled with the fact that the shafts and drills and drives of Mr. Hanau's sensational flotation encountered broken ground and poor values, very soon sounded the death-knell for the district. There were, however, sporadic outbursts of activity and periods of optimism, and the Molyneux and Hex River properties for a while attracted a little attention.

But about this time other attractions came into the arena of local speculation. Bushveld tin fields, Madagascar gold deposits, and new diamond discoveries in the Free State drew money and interest away from the Heidelberg gold fields, and before very long the great Coronation Syndicate and all its parasitic associates which had risen with it fell into disfavour, and a period of idleness, abandonment of claims, migration of prospectors, and withdrawal of capital befell the whole area outside of the relatively small area worked by the Nigel Mine, which continued to earn substantial profits. Johannesburg, ever fickle and easily drawn, had deserted its old loves and had been lured away by the cassiterite lenses of Vlaklaagte and the fabulous wealth of the Le Comte Syndicate.

THE HATCHING OF A NEW THEORY.

All the time, however, the preliminary development of the great Farther East Rand gold fields had been proceeding, and in 1904 Dr. Hatch, who had made a close study of drilling operations in the area between Boksburg and Nigel, read a noteworthy paper before the Geological Society which adduced evidence for the correlation of the Nigel with the Main Reef. "The evidence I offer," said Dr. Hatch, "is as follows: (1) The two reefs occupy the same geological horizons—by this I mean that they both rest on the highest bed of slates of what I have throughout this paper designated as the lower Witwatersrand beds. They are both overlaid by an identical sequence of beds belonging to the upper Witwatersrand beds. These include the amygdaloidal diabase, the Kimberley basement slates, and the Kimberley series of conglomerates. That these beds exist in the same order in the Nigel district as they do in the Springs district is shown by the Grootfontein borehole put down by the Consolidated Gold Fields, 12,000 feet north of the outcrop of the Nigel Reef, which cut these three markers. (2) The course of the reef under the overlying dolomite and Karroo beds has been traced by the following series of boreholes: Geduld (Nos. 1, 2 and 3), Grootvlei (Nos. 1 and 2), Vlakfontein and Grootfontein (Central Nigel Deep Joint). The above evidence clearly shows to my mind that in the Nigel Reef we have the continuation of the Van Ryn Reef, and consequently of the Main Reef of the Central Rand. Briefly, we have in the district immediately east of Springs the eastern rim or lip of the great Rand syncline, consisting of the Main Reef with the underlying slates and quartzites of the lower Witwatersrand beds. A thickness of 3,700 feet of these beds has been actually proved on Palmietkuil, which at a dip of 8 degrees would give an outcrop of five miles. But as we know that the lower Witwatersrand beds are much thicker than 3,700 feet, the total outcrop of the series before the basement granite is reached must be considerably greater than this. I may perhaps be permitted to point out that the occurrence of other synclines still further to the east, in which the conglomerates of the upper Witwatersrand beds might be found, is not excluded by the conclusions above arrived at. Since the granite is the basement rock on which the Witwatersrand beds are laid down, it must at one time have been uniformly covered over a large area in the Southern Transvaal by those beds. Subsequent earth movements caused the formation of a series of undulatory folds in the Witwatersrand beds, the anticlinal portions of which naturally fell an easy prey to the forces of denudation, bringing to the light of day the underlying granite in the form of bosses. Consequently, if it were possible to remove all later deposits, we should expect to see shallow synclines of the Witwatersrand beds separated by granite bosses occupying, roughly, the position of former anticlines. Immediately surrounding the granite we should find the lower Witwatersrand beds, and succeeding the latter in natural sequence the upper Witwatersrand beds always provided the denudation had been sufficiently severe or prolonged to have removed them before the deposition of the latter formations (dolomite and Karroo beds) could cover them up and preserve them."

THE COMBAT OF THE DOCTORS.

Dr. Hatch's paper naturally attracted a great deal of interest and provoked a large amount of discussion, and of course Hatch found that he had critics the most eminent of whom was perhaps the late Dr. Carrick. During the discussion Dr. Carrick drew attention to an interesting fact, namely, that No. 2 borehole on the town lands of Heidelberg, in his opinion, undoubtedly intersected the Nigel Reef at a depth of 1,943 feet from the surface, approximately 1,500 feet below a highly payable reef, such as is nowhere known to exist on the East Rand in the Kimberley series—that is to say, that there were two horizons, one 1,500 feet below the other, which carried good values, the lower of the two corresponding in Dr. Carrick's view to the Nigel Reef. This occurrence was instanced as a strong argument against the Nigel-Main Reef correlation theory.

In December, 1905, Dr. McClelland Henderson dealt with Dr. Carrick's views. Dr. Henderson, in the course of his paper stated: As recent developments on Daggafontein have shown, however, here also are two reef horizons, the one approximately 1,500 feet below the other, the lower of which is clearly proved by the evidence outlined in this paper to belong to the Main Reef series; so that if these two reef horizons correspond to those encountered in the town lands of Heidelberg, then according to Dr. Carrick's own argument, the Main Reef and the Nigel Reef, both constituting the lower horizon, are in that case identical. Summarising, as a result of recent exploration in the East Rand, it appears to me that the following facts are established, affording additional proof as to the identity of the Nigel and Main Reefs. (1) The continuity of the Witwatersrand beds has now been proved southwards for $3\frac{1}{2}$ miles across Daggafontein to within $5\frac{1}{2}$ miles of the Grootfontein Central Nigel Deep joint borehole, in which the presence of the same

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Witwatersrand beds was observed on the dip of the Nigel Reef. (2) The boreholes on the Daggafontein demonstrate that perfect regularity in the sequence of the upper Witwatersrand beds is maintained as far south as the boundary of Vlakfontein No. 24. (3) Two boreholes (Daggafontein Nos. 3 and 5) have now proved that a rich banket may be found in the Kimberley series, thus over-ruling the objection that the Nigel and the Main Reefs could not be identical because a rich banket was intersected 1,500 feet above the Nigel Reef in the town lands of Heidelberg. (4) That it is the Kimberley series in which Daggafontein boreholes No. 3 and 5 have encountered this banket is proved by the evidence deduced from the sequence of strata, supported by the macroscopic features and microscopical examination showing the characteristic abundance of rutile in the Kimberley basement slates."

THE FAR EAST RAND COMES TO THE FORE.

Let us follow this attempted chronology further. In 1906 we find that Sir (then Mr.) Drummond Chaplin has nothing cheering to say about the Central Nigel Deep, and in that year, too, we find the Federation Syndicate at last considering liquidation.

Right up to early in 1909 when South Africa in general and the Witwatersrand in particular began to recover from the effects of over-speculation and the incorrigible optimism which marked the conclusion of the Boer War, the Heidelberg areas were out of fashion and repute. The first whispers of a re-awakening activity in the area appear to be connoted by statements to the effect that the Sub Nigel Company had the acquisition of a larger claim area in prospect. These statements were in circulation in the early part of 1909, and in December of that year the undertaking of the Nigel Deep, comprising 514 claims, 30 stamp mill and cyanide plant, etc., was acquired for 147,580 fully paid shares. The enlarged Sub Nigel Company commenced crushing on December 18, 1909, on taking over the Nigel Deep property and equipment, and the output of the concern during the next year was 18,199 fine ozs.

It may be useful at this juncture to turn aside for a while from the geological aspect of the Witwatersrand east of Boksburg and to treat briefly of the great extension of mining activity which had taken place on the Farther East Rand, always bearing in mind that at least two eminent geologists had declared that in their views the reef series worked by those mines was identical with the reef series worked in the Nigel and Sub Nigel Mines. Up to 1907 four mines only of any importance were producing gold to the east and south-east of the township of Boksburg, viz., the New Modderfontein, New Kleinfontein, Van Ryn and Nigel. These four companies together produced in 1907 416,276 ozs. of fine gold. In 1908 Geduld entered the producing list, and next year the Further East Rand-cum-Nigel's contribution to the Rand's output was 489,791 ozs. In 1910 the Sub Nigel contributed 18,199 ozs. and the production rose to 578,515 ozs. In the next year the mills of Brakpan and Modder B. swelled the production, which in 1912 amounted to 1,144,215 ozs. In 1913 the Van Ryn Deep dropped stamps, and by 1916 there were eleven mines producing (the Modder Deep and Government Areas having entered the lists in 1915), and the output for that year from these properties was 2,115,145 ozs., or more than five times as much as it was in 1907. Latterly the Nigel has dropped out, but Springs Mines have more than compensated for the loss. The enormous growth and importance of the Eastern Rand section, which includes in the Nigel areas a portion of the Greater Heidelberg gold fields, finds best expression in the fact that in December last these eleven Eastern mines contributed 35.5 per cent. of the total Rand output and earned no less than 74.3 per cent. of the total profit! Even this surprising result will certainly be exceeded in the next few years. Daggafontein, New State Areas, Springs West, the Sub Nigel, the Lace Proprietary Mines, and the Southern Van Ryn should all be approaching the zenith of their productivity at a time when the old Central Rand section is

scarcely likely to have more than half a dozen mines conducting operations on a large scale. The centre of gravity of gold production in the Transvaal has shifted eastwards and south-eastwards from Boksburg. The best sections of the Central Witwatersrand have been worked out, and day by day it becomes increasingly evident that the State and private interests as well as the world at large (since more gold it is agreed is badly needed to readjust our present international, industrial and financial difficulties) can look best to the Eastern and South-eastern Witwatersrand for an expansion of the industry.

THE SLEEPER WAKES.

It is small wonder that in face of all these facts capitalists and prospectors have sought to bridge the gulf between the "legitimate Rand" and the outlying Heidelberg section and on the framework of the best geological thought to establish a chain of headgears and batteries from Springs to the Nigel and beyond. The Heidelberg district had, however, to redeem its character. The prejudices which had naturally arisen after the disappointments of the 'nineties and again of 1904 and 1905 had to be wiped out, and so it was not until just before the great war that any real measure of interest appears to have been re-awakened in the area. At the end of 1912 the Sub Nigel entered the dividend list, and at the beginning of 1914 we find the *South African Mining Journal* directing attention to the fact that there was much pegging activity in the Nigel district and that a considerable number of claims had been acquired.

DR. MELLOR ENTERS THE FIELD.

During 1914 the Sub Nigel Company increased its claim holding and in the subsequent year there occurred an event which was fraught with a very considerable measure of importance for the whole Eastern Rand. Dr. Mellor, of the Geological Survey, read a paper which was at the time described as a classic, in which he made public the results of his investigations into the geological structure and stratigraphical relationship of the country which extends to the east and south-east of Boksburg. With Dr. Mellor's paper and his critics, with subsequent flotations and operations in the Greater Heidelberg gold fields, and with the work that is being carried on there at the present time it will be our duty to deal in subsequent articles of this series.

(To be continued.)

[With reference to the map accompanying this article, it may be explained that the line of "probable sub-outcrop" is taken from Dr. Mellor's paper, which was contributed to the transactions of the Geological Society of South Africa, while the approximate 4,000 feet contour line is taken from a map by Dr. J. McC. Henderson, in the transactions of the same Society. It must be pointed out that owing to the low average dip towards the centre of the basin, which may be taken at, say, 7 degrees, the greater part of the area can be regarded as lying at a depth of little more than 1,000 feet, or practically flat.

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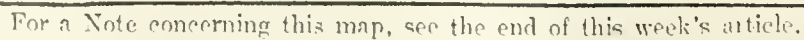
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First Map : The New Kleinfontein to the Nigel.



SOUTH AFRICA AND KING COAL.—V.

Further Facts and Figures about the By-Product Industry—Professor Wilkinson's Views— The Limitations of a Local Industry—The Tar Trade of the Union.

THE instructive diagram appearing in our issue of January 25th last, which illustrated in graphic form the industrial possibilities of coal by-products, has attracted much attention, but it seems to have caused a good few people to assume that all the many by-products from coal thereon depicted are within the industrial scope of South Africa in the near future. But, as we pointed out last week, the production of by-products from coal requires considerable capital, expert technical advice and supervision and a careful study of markets to insure success. Last week we dealt with the by-product industry in so far as the production of coke, sulphate of ammonia, tar and benzol were concerned, and it would appear that, for the time being at any rate, we should be well advised to confine our attentions to these products only and not to attempt an entrance into the alluring and complex fields of industry which appear on the by-product chart under such heads as Salol, Phenolphthalein, Oil of Wintergreen and Bismark Brown, etc.

A TRIBUTE TO KING COAL.

In this connection we would direct attention to an article which appears in the last issue of the *South African Journal of Industries*, entitled "Coal: Its Value as a Raw Material for Distillation Products," by Professor T. A. Wilkinson, South African School of Mines and Technology: "The astounding progress of the world-nations since the beginning of the nineteenth century was wholly dependent upon coal as a source of energy," wrote Professor Wilkinson in his first article, which appeared in December. "At the present moment," he continued, "no other source of energy of any magnitude has been discovered in the Union of South Africa, and therefore the coal deposits form almost the sole foundation upon which progress and development in the immediate future must be built. Hitherto, the history of the utilisation of the coal already mined has been exactly similar to that of the earlier development of coal-fields elsewhere. The bulk has been used solely for the purposes of steam-raising in stationary and locomotive boilers—in other words, the coal has been burnt to waste without any regard to economy. Self-preservation, however, indicates the necessity for tackling the problem of its complete utilisation for the purposes of the nation, whilst there is still time, which means that the methods of the past must give way to a system of precision and exactitude in the light of modern knowledge."

THE LIMITATIONS OF THE BY-PRODUCT INDUSTRY.

In his latest article, Professor Wilkinson deals with coal tar, oils and pitch, and in the final portion of this contribution he makes the following important statements in regard to local by-product possibilities. He writes: "The products of the distillation of coal-tar enumerated above are of such great variety and so manifold in their uses as to capture the imagination and at once give rise to ideas of the possibilities of local production. The factors, however, involved in the consideration of this question are somewhat intricate and complex, but it may not be out of place to outline briefly a few of the salient points. In the first place, the amount of tar obtainable from coal is approximately 5 per cent., and owing to the very small number of distillation plants in the Union, only very small amounts can, comparatively speaking, at present be produced. These amounts find an immediate and profitable use as material for road construction and improvements. But assuming that this were not the case, distillation would have to be resorted to in order to obtain by-products of commercial value. The first fraction would be of service as a motor fuel, denaturant, or solvent. Alternatively, a few intermediate substances could be prepared from it by simple methods, such as sulphonation, nitration, or chlorination for export, but an artificial chemical industry, whether dyes, drugs,

perfumes, or photographic chemicals, based on the utilisation of this fraction, is quite out of the question, as far as South Africa is concerned at the present moment, and, indeed, as far as can be judged, for many years to come. The main reasons for such a statement may be summarised thus—(a) The present small production of raw material; (b) the fact that South Africa possesses no large textile industries, and hence for some years will require but few dyes; (c) the heavy capital expenses involved at the commencement and maintenance costs afterwards; (d) the large number of dyes which it would be necessary to manufacture, many in small quantities only, in order that the industry could cope with the demands which would be made upon it; (e) the competition of England, France, Germany, Switzerland, Italy, America and Japan, each country possessing well equipped factories and experienced staffs.

"These arguments apply more particularly to a dye industry, but, at the same time, are more or less valid for the other industries mentioned. The second and third fractions would be valuable as disinfectants, the phenolic and cresotic oils being required in large quantities, and for this purpose excessive refining would be unnecessary. The last fraction might then be run out of the still along with the pitch for road material. Summarising, the distillation fractions would, therefore, be as follows: Light oils up to 170°C. for use as motor fuel, etc.; heavy oils, 170°C. to 270°C. for use as disinfectants; pitch oils for use as road material. Such a scheme should be economically possible, more especially at the present time with supplies either non-existent or obtainable only at enhanced prices. The ammoniacal liquor produced could also be distilled in a comparatively simple and cheap plant, thus yielding an additional source of profit, whilst the gas and coke could be used to effect the distillation, if deemed advisable. The above remarks apply exclusively to the tar ordinarily produced in high temperature distillation, that is, the particular variety which has hitherto been produced in quantity."

THE TAR TRADE OF THE UNION.

In his paper, Professor Wilkinson has much to say that is of interest in regard to coal tar. He states that the total value of the imports in pounds sterling into the Union of this substance and its derivatives for the years as stated are as under:—

	1912.	1913.	1914.	1915.	1916.
	£	£	£	£	£
Tar	24,193	—	—	—	—
Tar and substitutes ...	—	26,765	17,690	20,728	28,334
Creosote	384	801	569	392	1,735
Pitch	1,036	913	1,687	765	681
Mineral oils (coal gas, shale, and tar)	31	—	205	25	1,182
Disinfectants and germicides	48,353	43,272	46,555	51,581	80,951

The total output and value of tar in the Union is as follows:
Gallons: 1912, 25,895; 1913, 43,293; 1914, 2,225; 1915, 26,050; 1916, nil.

Value: 1912, £806; 1913, £1,433; 1914, £124; 1915, £881; 1916, nil.

Totals: 57,463 gallons; Value, £3,244.

These figures refer only to the amount of tar produced by coal mines, no statistics being available for that produced by gasworks other than those given subsequently.

Coal-tar, continues Professor Wilkinson, is the heavier of the two liquids produced by destructive distillation of coal, and consists of the oily portion of the liquid distillate, which is mixable with water only to a very limited extent. It is very complex and also very variable in composition, this

depending on a large number of factors, such as the temperature at which the distillation is effected, the shape and size of the retorts used, the nature of the coal, the methods used in condensation, etc., and also whether the coal is distilled in closed retorts out of contact with air or in producers with the aid of air, steam, or other gases, or a combination of these. It has not yet been manufactured as the chief produce, but only as a by-product in the manufacture of gas and latterly of coke. The amount which can be obtained by distillation from coal may be approximately estimated at about 5 to 5½ per cent., and the specific gravity varies from 1.1 to 1.2. In the raw state it has been used for the following purposes: (a) Manufacture of tar for illumination and heating. This is carried out by volatilising it completely either by passing it through a red-hot tube or burning it in the form of a spray produced by means of compressed air and steam, or by burning it on red-hot coke in a boiler or producer. Its calorific value is about 1½ times that of coal. (b) For making new roads and improving those already made, the object being in both cases to secure a road sur-

face which shall be as free as possible from dust in dry weather and resistant to disintegration in wet weather. This has been necessitated in recent years by the great development of high-speed motor traction. In South Africa it is at present the chief use to which tar is put. For the purpose the tar should be prepared by getting rid of all ammoniacal liquor mixed with it, and then spread evenly whilst still hot in order that it may penetrate as far as possible. Substitutes are also in use, the majority of which are prepared from the products obtained when tar is distilled, e.g., tar asphalt made from pitch and the heavy oils of high boiling point produced in the last stages of the distillation. (c) For preserving timber from the effects of weathering and insects, due to the antiseptic oils it contains. (d) For painting metals and stone as a protection against rust and chemical action. (e) For briquetting anthracite, coal, and coke dust. (f) For manufacturing roofing felt, damp course, tarpaulins, etc. (g) For a variety of minor uses, e.g., in medicine as a denaturant for spirit, as a fuel for Diesel engines, and for making lampblack.

Maraisdrift and Klippoortje.

London appears to be evincing a considerable amount of interest in the farm Maraisdrift (Heidelberg district). Sir Abe Bailey's interest in this property was acquired some little while ago by the Union and Rhodesian Trust, Ltd., and it is pointed out that in addition to this purchase the Union and Rhodesian Trust, Ltd., have acquired an option over the H.E. Proprietary Company's share of Klippoortje, which lies immediately south of Maraisdrift. A London contemporary suggests that amalgamation of these interests with Tulipvale of Houtpoort, Ltd., is in the air.

Sale of Durban-Roodepoort Gold Mine.

Not that we believe for one moment that any advertisement in this journal would be overlooked, we nevertheless wish to draw attention to a most important sale, or as the auctioneers, Messrs. M. Harris & Co., prefer to call it, "sale extraordinary," of all the mining machinery, plant, equipment, mine stores and buildings of the Durban-Roodepoort G.M. Co., Ltd. The property is situated half a mile from Roodepoort railway station, and the auctioneers have very wisely arranged that vehicles will be provided to convey the prospective purchasers from the station to the property and serve refreshments at the mine during the days of sale. There will be no difficulty whatever about transporting the purchases from the mine to the station. In view, however, of the more important difficulty of shipping transport from Europe and America to South Africa and the possibility of a continued shortage of mining machinery, stores, etc., the "sale extraordinary" affords an opportunity on the 10th inst. of acquiring a complete plant in perfect order and condition. We advise our readers to refer to the advertisement.

Knights Deep.

The following is a summary of the operations of this company for the quarter ended 31st January, 1919:—The development footage accomplished during the quarter amounted to 1,707 feet, the footage sampled being as follows:—Main Reef: Footage sampled, 580 feet; reef width, 10 inches; reef value, 5.14 dwts. South Reef: Footage sampled, 1,120 feet; reef width, 33 inches; reef value, 7.23 dwts. Tons milled, 239,200. Loss on working (including sundry revenue), £12,609. Appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, etc., amounted to £2,358. Shortage of native labour has continued to be severely felt. During the last two months there has been a material improvement in the number of natives coming forward for work on the mines from British South African territory. Owing to an outbreak of an influenza epidemic in

Portuguese East Africa, recruiting operations have been suspended for some weeks, but it is expected that recruiting will recommence in those areas at an early date.

Manganese on the West Rand.

A report has been received by the directors of "Manganese, Ltd.," on manganese ore on the farms Zwartkruis No. 67 and Sterkfontein No. 68, district Krugersdorp. The report is signed by Mr. E. P. Binet, who states: "The deposits of manganese ore on the portions of above farms selected by your company reveal a very high-grade quality. Both quantity and quality exist in a remarkable degree and should prove highly remunerative." The following copy of certificate of analysis made by the National Bank of South Africa, Ltd., Johannesburg, accompanies the report:—

	No. 1. Per cent.	No. 2. Per cent.
Manganese Di-oxide (MnO ₂)	77.9	85.75
Iron (Metallic) (Fe)	0.6	0.7
Silica (SiO ₂)	1.15	3.9
Sulphur (S)	0.025	0.027
Phosphorus (P)	0.104	0.05
Moisture (at 100° C.)	0.65	0.25
Total Manganese (Met.) (Mn)	56.1	59.4

Sakalava Oil.

The secretary of the Sakalava Madagascar Proprietary Oilfields, Ltd., has addressed a circular to shareholders, which states:—

Referring to the Circular issued to Shareholders by the Chairman of the Company, under date 27th January, 1919, and with further reference to the Circular issued by the Board of Directors at the same time, the Board would earnestly direct the attention of Option-holders to the concluding paragraph of the latter Circular, wherein it is stated:—"That, in the event of any of the aforesaid 18,000 Shares not being applied for by Option-holders by the 28th February, 1919, any Shares so remaining shall be offered to Shareholders who are not option-holders, on the same terms and conditions up to and including the 31st March, 1919," from which it will be noted that applications for these shares close to Option-holders on the 28th February, 1919. After that date Shareholders may apply for these shares up to the 31st March, 1919. The Board desires to emphasise the fact that the funds provided by this Issue of Shares will enable the Directors to keep the Company alive until such time as the negotiations, which are being initiated for the reconstruction of the Company with adequate working capital, are carried to a successful conclusion. The notice of Option-holders and Shareholders is particularly directed to the importance of these Shares carrying an option of a further two Shares at 10s. per Share for a period of twenty months from the 1st March, 1919. Copies of above-mentioned Circulars are herewith enclosed for the information of Shareholders. Boring at No. 6 Well is still being vigorously prosecuted, and the latest information received from Mr. D. A. English, one of your Directors, is that a depth of 1,670 feet has now been attained, in hard red formation, and at 890 feet five feet of liquid oilsands had been penetrated.

BASE METALS IN 1918.

Tin Production Increases in Value—A Large Decline in the Copper Output—South Africa the World's Largest Producer of Corundum—First Returns of Iron Ore and Arsenic.

FIGURES are now available as to the total productions of base metals in the Union of South Africa during last year. The outstanding features of the returns issued by the Mines Department are that whilst there was a substantial increase in the production of tin in 1918 as against the previous year, the output of copper last year was one-third of what it was in the previous twelve months. It is to be noted too that for the first time in the history of the Union outputs of iron ore and of arsenic appear in the annual returns.

THE WAR AND S.A. COPPER.

Turning first of all to copper, it is to be noted that South Africa's production of copper, which in 1917 was 20,131 tons, containing 49.46 per cent. of pure metal, declined last year to 6,824 tons, with a pure metallic content of 53.29 per cent., and a value of £358,627.

This great drop is primarily due to war causes. The Transvaal's production was rather less than half of what it was in 1917, but the Cape's output fell from 10,525 tons, valued at £550,642 in 1917, to only 1,669 tons, worth £83,657 last year. Practically the whole of the output of the Union comes from the Messina Mine, in the Northern Transvaal, and the mines of the Cape and Namaqua Copper Companies in Little Namaqualand. None of these mines are equipped for the actual production of the metal, and have hitherto exported all their copper in the form of hand-picked ore, concentrate, and matte. The industry has in consequence received a very serious set-back from the decree of the Ministry of Shipping prohibiting the shipment of copper ore, matte, and concentrate; but with the prospect of an early peace in sight, it is probable that the shipping facilities which existed in the pre-war period will be made available again. The Namaqua Copper Co., after nearly 50 years of continuous production, some time ago decided temporarily to close down their mines. The Cape Copper Company are continuing operations, and propose stocking the matte and concentrate produced. The Messina Company, on the other hand, are endeavouring to obtain equipment to enable them to produce blister copper. In the Namaqualand mines the grade had of recent years fallen to such an extent as to cause the gravest concern; and at the last annual meeting of the Messina Company shareholders were informed that they had "to contemplate the unpleasant fact that the life of the mine may be approaching its end." As pointed out by Dr. Wagner in the instructive presidential address which he recently read before the South African Association for the Advancement of Science, the future of the Namaqualand copper region, where enormous quantities of low-grade ore, averaging from $1\frac{1}{2}$ to $2\frac{1}{2}$ per cent. copper, are available in the existing mines and in the hundreds of ore-bodies that have not hitherto been opened up, depends on the introduction of economical methods such as leaching flotation for the beneficiation of this material. The ore in question is well over the grade that is being profitably exploited on a vast scale in the United States and in Chile, in areas just as inaccessible and inhospitable, and there is no apparent reason, therefore, why the introduction of modern methods of treatment should not give this grand old mining field a new lease of life. At Messina it is a question of locating further rich ore-bodies of the type being worked, which have been shown to owe their origin to a process of secondary enrichment by descending solutions.

THE TIN INDUSTRY BENEFITS.

The tin output of South Africa in 1918, on the other hand, was the most valuable that the country has ever produced. In point of tonnage it was the smallest return that has been made for several years, but on account of the value obtained for the product and the high grade metallic con-

tent (72.13 per cent. against 66.8 per cent. in 1917) the output sold for £147,952, a figure which was only approached in one previous year, viz., 1913, when 3,672 tons of a value of £136,550 were produced. The Transvaal produced practically the whole of the total South African output, the Cape contributing only $14\frac{1}{2}$ tons. Whilst the copper industry of the country has suffered severely through causes directly attributable to the war, cassiterite mining appears to have benefited thereby through the remarkably high prices obtaining for the metal and the foresight and enterprise of the Zaaiploots Company in erecting their own smelting plant.

OTHER METALS AND MINERALS.

Next in order of production to tin and copper we find lime, with a productive value of £158,245 in 1918 as against £131,373 in 1917. The fourth mineral on the list is asbestos. This industry has made very substantial progress in South Africa during recent years, and the asbestos mines in both the Griqualand West and Lydenburg districts are reported to be opening up well. The production of asbestos in the Union in 1918, however, was £54,037, or £33,300 less than in 1917. This substantial decline is considered to be mainly due to lack of shipping space, but this disadvantage may be removed in the near future, and it is satisfactory to learn that large quantities of South African asbestos are being absorbed by local industries.

Corundum comes fifth on the list with an output worth £26,260, which is more than double the 1917 production. It may not generally be known that South Africa is the largest producer of corundum in the world, and that in the Zoutpansberg the Transvaal has the most important corundum deposits which are known to exist. Other mineral products of the Union in 1918 were as follows:—

	Value, 1918.	Value, 1917.
Soda	£11,099	£29,377
Iron Pyrite	7,002	1,463
Gypsum	6,843	5,092
Tungsten	3,647	1,551
Iron Ore	2,729	—
Antimony	2,589	12,428
Graphite	2,294	2,590
Magnesite	2,184	2,050
Manganese	1,965	641
Lead	1,886	3,761
Arsenic	1,759	—
Mineral Paints	1,427	305
Flint	1,491	1,120
Mica	1,185	877

The Union's total production of base metals, minerals, etc., apart from tin and copper, was worth £288,355 last year.

Now that hostilities in Europe have ceased and more shipping should be available in the near future it is not unreasonable to hope that these embryonic industries will rise to larger proportions. The aspect of creating and stimulating local markets for these minerals must, too, be borne in mind. We regard the first production of iron as a particularly hopeful sign.

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THE UNION'S DIAMOND OUTPUT FOR 1918.

Mining and Output for the Year 1918. (1 Load=16 cubic feet. 1 Carat = 205·304 milligrams).

DISTRICT AND PROVINCE.	MINES.				ALLUVIAL.			TOTAL PRODUCTION.	
	Pro- ducing during Dec.	PRODUCTION.		Value per Carat.	PRODUCTION.		Value per Carat.	Carats.	Value.
		Carats.	Value.		Carats.	Value.			
WITWATERSRAND		£38·50	£ 43		10·00	100	—	48·50	£ 143
PRETORIA	1	820,267·44	1,264,731		17,793·75	45,501	523	838,061·19	1,311,232
KLERKSDORP									
Farm Blesbokfontein No. 63...	—	—	—	—	8,567·34	59,240	—	—	—
Farm Kameelkniel, No. 47 ...	—	—	—	—	7,453·27	50,800	—	—	—
Farm Leenwfontein, No. 143 ...	—	—	—	—	7,189·13	50,027	—	—	—
Farm London, No. 33	—	—	—	—	6,276·99	44,246	—	—	—
Farm Syfergat, No. 150	—	—	—	—	4,584·09	33,030	—	—	—
Farm Italie, No. 328	—	—	—	—	4,287·04	26,772	—	—	—
Farm Klipfontein, No. 130 ...	—	—	—	—	2,971·04	20,313	—	—	—
Farm Klein Italie, No. 12 ...	—	—	—	—	2,419·19	18,268	140·3	57,926·51	406,306
Farm Kareepan, No. 137 ...	—	—	—	—	1,427·20	10,266	—	—	—
Farm Bloemheuvcl, No. 171...	—	—	—	—	1,208·95	10,583	—	—	—
Farm Dievedraai, No. 245 ...	—	—	—	—	1,157·88	8,183	—	—	—
Schweizer Reneke	—	—	—	—	1,012·73	7,827	—	—	—
Farm Katdoornkraal, No. 163	—	—	—	—	980·06	6,821	—	—	—
Other Farms	—	—	—	—	8,391·60	59,930	—	—	—
ERMELO	—	—	—	—	2·44	11	—	2·44	11
TRANSSVAAL	1	820,305·94	1,264,774	30·10	75,732·70	452,918	119·7	896,038·64	1,717,692
KIMBERLEY	2	1,343,620·50	4,055,398	—	6,958·25	50,627	—	1,359,138·75	4,119,035
BARKLY WEST	—	350·50	595	—	55,092·25	417,661	—	55,442·75	418,256
HERBERT	—	—	—	—	1,366·25	11,443	—	1,366·25	11,443
TAUNGS	—	—	—	—	2,250·00	20,657	—	2,250·00	20,657
KURUMAN	1	79·00	632	—	—	—	—	79·00	632
ALI WAL NORTH	—	—	—	—	163·00	1,066	—	163·00	1,066
CAPE	3	1,344,050·00	4,056,625	60·3	65,829·75	501,454	152·4	1,418,439·75	4,571,089
BOSHOF	2	29,595·00	50,182	—	313·91	1,891	—	29,908·91	52,073
WINBURG	3	3,534·54	8,780	—	9·13	15	—	3,543·67	8,795
FAURESMITH	2	187,876·25	756,922	—	—	—	—	187,876·25	756,922
ROUXVILLE	—	—	—	—	1,545·00	8,266	—	1,545·00	8,266
KROONSTAD	—	—	—	—	1·19	3	—	1·19	3
BETHULIE	—	—	—	—	2·00	8	—	2·00	8
HOOPSTAD	—	—	—	—	4·75	19	—	4·75	19
ORANGE FREE STATE ...	7	221,005·79	815,884	73·10	1,875·98	10,202	108·9	222,881·17	826,086
UNION OF SOUTH AFRICA	11	2,385,361·73	6,137,283	51·5	143,438·43	964,574	134·6	2,537,360·16	7,114,867
YEAR 1917	12	2,710,041·38	6,659,721	49·2	182,992·38	1,041,776	113·10	2,902,416·51	7,713,810
YEAR 1916	7	2,170,348·04	4,769,479	43·11	167,620·17	948,571	113·2	2,346,330·21	5,728,391
YEAR 1915	1	2,131·26	3,887	36·6	97,678·47	392,196	80·4	103,385·73	399,810
YEAR 1914	—	2,653,089·70	4,906,342	37·0	143,924·62	576,729	80·2	2,801,016·57	5,487,194
YEAR 1913	12	4,944,946·39	10,254,203	41·6	206,049·29	1,120,227	108·9	5,163,546·68	11,389,807
YEAR 1912	12	4,875,622·70	9,050,255	37·1	184,828·89	995,625	107·9	5,071,882·34	10,061,489
YEAR 1911	13	4,748,470·83	7,993,830	33·8	133,691·22	742,750	111·1	4,891,998·55	8,746,724
JUNE TO DECEMBER, 1910	11	2,964,087·05	4,206,662	28·5	73,938·17	337,074	91·2	3,043,447·72	4,547,809

*Recovered by certain Witwatersrand Gold Mining Companies.

Barnatos and the A.E.C.

The forty-ninth ordinary general meeting of the African Banking Corporation, Ltd., was held in mail week at Winchester House, Old Broad Street, E.C., the Right Hon. the Earl of Selborne, K.G. (Chairman of the Corporation), presiding. The Chairman said that the directors had asked the shareholders to meet simply for the purpose of adopting the directors' interim report and declaring a final dividend of 4 per cent., less income tax, being at the rate of 8 per cent. for the year. It had been impossible to present any accounts, because they had not arrived in consequence of the epidemic of influenza in Capetown and all over South Africa. Bad as the influenza had been in England, it

had really been far worse in South Africa; in fact, it had been almost in the nature of a visitation of plague. For a long period none of the banks were open for more than an hour a day, and the different branches were hardly able to meet that obligation. The business of the bank during the past year had been satisfactory, and the directors had decided on a further issue of capital because the business was expanding, and they believed that it was going to expand still further. That issue had been underwritten by Messrs. Barnato Brothers on terms very favourable to the Corporation, and he wished, on behalf of the shareholders and the directors, to express their obligation to one of his colleagues on the Board—Mr. Joel—who was able to negotiate the issue on behalf of the Corporation.

THE GOLD STANDARD AND THE NEED OF GOLD.—I.

Points from the Report of the American Committee on the Gold Situation.

THE relation between the high prices and the gold supply and the credit system are matters that economists have discussed at length at various times, says the report of the American Committee on the Gold Situation. It continues: Many of the leading economists in the country believe in the quantity theory of money, but apparently there are as many who disagree with that theory. Although a depreciated currency such as existed in Russia caused prices to rise many times beyond their normal level, gold went to a premium in that country and this premium kept pace with the depreciation of a currency that no longer had a substantial gold reserve behind it, and ten times as many paper rubles could be bought with a zolotnik of gold in the latter part of 1917 than at the beginning of the war.

GOLD AS THE STANDARD OF VALUE.

Virtually, all economists agree that some form of the gold standard should be maintained. Even those who have pronounced ideas as to the advisability of a different standard concur that it would be dangerous to attempt any drastic changes during the war and the readjustment period. The gold standard is a vital necessity in the regulation of foreign exchange, and shipments of gold to neutral countries should be encouraged to stabilise the value of our dollar, to insure confidence, and to promote business relations. The following is of interest in this regard: "Employment and prosperity after the war are dependent upon confidence and good understanding in industry and an attack upon the standard value would do inestimable injury to all classes. A period of falling prices has its perils to be foreseen and guarded against, but the conditions represent a normal and necessary reaction from an excessive movement in the other direction, and when the balance is restored, confidence in the natural order is restored, and the way is clear for prosperity on an assured basis. When arbitrary and impulsive legislation is resorted to there remains no basis upon which to calculate the future."

The gold standard has great advantages over any other system in its simplicity and the fact that the monetary systems of the world, almost without exception, are based upon gold. This is favourable to international trade relationships and exchange. The need of a common unit of value in the world's affairs is shown at the present time by the difficulties that have arisen because the free movement of gold is interrupted. Experiences during the war have emphasised the ability of countries to carry on their domestic affairs without gold, but have shown with equal emphasis the necessity of gold in the international business. The settling of international balances is one of the chief monetary functions of gold. In the United States gold has been withdrawn from circulation, embargoes have been laid on export of the metal or of coin, and industrial use of gold has been greatly restricted. All of these measures emphasise the fact that those in authority recognise the need of a large gold reserve to maintain the financial integrity of the country. The need of gold is fully recognised by the banks. The American Bankers' Association in convention at Chicago, September 23, 1918, passed resolutions on the desirability of maintaining the gold production of the United States as follows:—

"Whereas, the only form of relief that will prove effective and can be applied promptly is action by the United States Government in such form, and by such method as may be deemed fit and proper under the circumstances, and

"Whereas, gold is the standard of value and the basis of all credit, and is of vital importance to the financial and commercial life of the nation and of the world; Now, therefore, be it

"Resolved, that the American Bankers' Association in convention assembled respectfully requests and urges upon this Government of the United States the desirability of maintaining the production of gold to at least its pre-war volume, and asks that steps be taken immediately to that end; and be it further

"Resolved, that the secretary of this Association be and he hereby is instructed to send a copy of this resolution to the President of the United States, the Secretary of the Treasury, and the Secretary of the Interior, advising them of its adoption and be it also further

"Resolved, that considering the great importance of this subject, this Convention recommends to the Executive Council that the matter be referred to the Federal Legislative Committee and the Currency Commission for exhaustive study and such action as may be deemed necessary."

Production of gold is not a war necessity in the United States in the same sense as the mining of coal, iron, copper, and other base metals, or the maintenance of a high rate of output in certain other industries. However, it is essential to preserve the confidence of the public in the national credit, and any decline in gold production may cause the public to question the ability of the Government to pay bond issues and other Government obligations in gold coin. The very raising of the question by the gold miners will tend to shake public confidence and educational measures should be undertaken to offset any sense of insecurity arising from arguments to those not fully conversant with economic principles.

BANK RESERVES AND NATIONAL CREDITS.

The amount of gold coin and bullion in the United States is given in the Bureau of the Mint Report for 1917 as approximately 3,100,000,000 dollars. This is a greater amount than has ever been held by any one country at any previous time and it is sufficient, according to authorities, to maintain our credit. The creation of the Federal Reserve banking system has made each dollar more serviceable than ever before and any measures which increase the efficiency of the dollar in active exchange have the same effect as increasing the number of dollars. It is not only the number of dollars but the velocity of their circulation that determines the work done by them. The Federal reserve banks have power to meet sudden calls for funds through the issuance of Federal reserve notes or through the reduction under emergency conditions of their cash reserves, below the normal legal minimum. All this has made our currency much more elastic than before, but has also reduced the ratio of real gold reserve to outstanding obligations.

(To be continued.)

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*Monthly letter, National City Bank, New York, October, 1918

THE FEBRUARY GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of February:—

Company	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
City Deep ...	154	10	10,000	18,557	£17,510	30 4.9
Cons. Main Reef	220	6	41,610	15,820	6,417	28 8.7
Crown Mines ...	660	26	124,000	13,078	12,970	27 4.8
Durban Deep ...	100	3	25,000	8,843	1,831	28 4.4
East Rand Prop.	440	19	103,500	31,654	8,734	23 11.9
Ferreira Deep ...	280	7	31,700	11,948	7,286	26 6.9
Geldenhuis Deep.	300	7	42,500	11,892	*5,489	26 0.8
Knight Central	120	3	20,000	6,723	427	27 8.4
Modder. B. ...	104	8	18,000	27,236	60,342	22 11.7
New Modder ...	236	15	78,000	39,749	93,173	19 1.4
Nourse Mines ...	180	5	32,600	11,125	310	28 4.6
Robinson ...	180	6	35,800	9,854	4,135	20 10.9
Rose Deep ...	300	7	47,500	13,125	8,519	19 7.2
Village Main R.	130	4	17,000	5,131	1,167	23 11.4
Wolhuter ...	120	4	26,600	7,916	3,970	22 0.0
Village Deep ...	180	7	45,800	11,038	2,580	24 7.1

Tls. & averages 3704 137 759,610 276,689 £223,885 24 9.4

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.

C Includes 56 Nissen stamps.

* Loss.

City Deep, Limited, East Rand Proprietary Mines, Ltd.—The decrease in the profit of these two companies was due to the lower tonnage resulting from the fewer number of working days in the month. The labour position shows no improvement yet.

Crown Mines, Ltd.—Reduction in profit due to heavy loss in tonnage milled and consequent increase in costs. Causes: (1) Insufficient native labourers for tramming and lashing. (2) Breakdowns of underground loco. haulages. (3) Shorter month (three days less).

Ferreira Deep, Ltd.—Drop in profit due to reduction in crushing of about 6 500 tons and lower yield recovered.

Geldenhuis Deep, Ltd.—The loss for the month was due chiefly to the breakdown of the main underground hoist at No. 2 shaft, which resulted in a serious loss of tonnage. The labour position improved very materially during the month.

Modderfontein B. Gold Mines, Ltd.—Reduction in output caused by explosion in air mains. Mine lost four days milling, and only hoisted 21 full days.

The Village Main Reef G.M. Company, Ltd.—Drop in profit due chiefly to normal fluctuation in grade. Labour position is still bad.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of February:—Central Mines: Tons crushed, 10,400, yielding 3,394 fine ozs. Elandsdriif Mine: Tons crushed, 1,240, yielding 636 fine ozs. Vaalhoek Mine: Tons crushed, 1,210, yielding 387 fine ozs. Estimated value of month's output, £18,356; estimated loss for the month, £156.

Union Corporation.

Results of operations on the producing mines of this group for the month of February:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	39,500	£59,391	30 1
Modder Deep Levels ...	70	39,700	82,938	41 9
Princess Estate ...	60	20,000	24,984	25 0
Totals ...	230	99,200	£167,313	—

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£39,217	19 10	£20,171	10 3
Modder Deep Levels ...	35,698	18 0	17,240	23 9
Princess Estate ...	27,531	27 6	*2,550	2 7

Totals ... £102,449 — £64,861

* Loss.

Consolidated Mines Selection Group.

The following are the results of operations for the month of February:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan ...	110	41,300	25 0.722
Springs ...	80	35,300	24 2.660
Totals and Averages ...	190	76,600	24 8.083

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan ...	£80,925	39 2.266	£29,176	14 1.544
Springs ...	68,022	38 6.474	25,271	14 3.814

Totals & averages £148,947 38 10.674 £54,417 14 2.591

Albu Group.

The January operations of the producing mines of this group were as follows:—

Company	Tons Crushed.	Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	11,700	£14,859	25.40	£11,865	*£2,994
Meyer & Charl.	11,325	14,508	24.96	33,553	19,045
New Goch ...	12,550	12,607	20.09	12,094	*513
Rodepoort U.	23,330	23,956	20.56	22,908	*1,048
Van Ryn Est...	31,100	27,251	17.52	31,391	1,140
West Rand C.	28,600	33,030	23.09	33,141	111
	118,905	£126,211	—	£144,952	£23,296
				Less losses	4,555

Net total £18,741

* Loss.

The operations of all the mines of the group were adversely affected by the short month.

Aurora West.—The tonnage drawn from the mine is gradually increasing as the result of the installation of jack-hammers.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of February:—Tons crushed, 3,160, yielding 1,452 fine ozs.; estimated value of month's output, £6,040; estimated profit for the month, £1,207.

Companies Registered.

India-Rubber Products (South Africa), Ltd., 11-17 Oceana Buildings, Simmonds Street, Johannesburg; capital £10,000.
 Spaarwater Gold Mines, Ltd., 1st Floor, Jeppe Arcade, Fox Street, Johannesburg; capital £300,000.
 The Art Manufacturing Company, Ltd., 147 Marshall Street, Jeppe, Johannesburg; capital £2,000.
 The Himayete Eslam Madressa Society, 193 Market Street, Johannesburg; capital 12s.
 The Crofton Car Control Company, Ltd., 16 Meischke's Buildings, corner Market and Harrison Streets, Johannesburg; capital £1,000.
 The Barbrook Gold Mining Syndicate, Ltd., the Offices of F. Haselden, Marek Square, Barberton; capital £3,600.
 G. I. Hoffman & Company, Ltd., 36a Loveday Street, Johannesburg; capital £1,500.
 The African Industrial Development and Ranching Company, Ltd., 144 Exploration Buildings, Commissioner Street, Johannesburg; capital £20,000.
 The Rustenburg Ranchers, Ltd., 8 Meischke Buildings, Harrison Street, Johannesburg; capital £500.
 The South-West African Lands, Ltd., 146 Exploration Buildings, Commissioner Street, Johannesburg; capital £1,000.
 The Capital Loan and Finance Company, Ltd., 5 Bureau Street, Pretoria; capital £1,000.
 African Lime Works, Ltd., 22 Royal Chambers, Simmonds Street, Johannesburg; capital £3,000.
 Derby Finance Company, Ltd., Office of Louis L. Playford, Church Street, Rustenburg; capital £1,000.
 Jogbhay & Sons, Ltd., corner of 21st and De la Rey Streets, Malay Location, Johannesburg; capital £500.
 Thos. Jesson & Company, Ltd., 16d Goldfields Hotel, Loveday Street, Johannesburg; capital £600.
 Ebrahim Hajee, Ltd., 26 Market Street, Johannesburg; capital £550.

FOREIGN COMPANIES.

G. R. Jones & Company, Ltd., care James P. Scaife, Cullinan Buildings, Johannesburg; capital £25,000.
 The African Wholesale Jewellers, Ltd., care Max Gerson, 43 Sacke's Buildings, Johannesburg; capital £10,000.
 Middelburg Mineral Corporation, care M. W. Skrivaneck, Mutual Buildings, Market Street, Middelburg, Transvaal; capital \$1,000,000.

ALTERATIONS AND ADDITIONS TO FOREIGN COMPANIES.

Vaal River Gold Estates, Ltd., Johannesburg

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

Marshall's Township Syndicate, Ltd., Johannesburg; reduction of capital.
 Macdonald, Adams & Company, Ltd., Johannesburg; reduction of capital.
 S.A. Nitrates, Ltd., Johannesburg; purchase.
 The South African Rubber Manufacturing and Tyre Company, Ltd., Johannesburg; alteration of articles.
 The Small Estates, Ltd., Johannesburg; liquidation.
 Building Material Exchange and Trading Company, Ltd., Johannesburg; alteration of articles.
 The Zeederberg Estate Company, Ltd., Pretoria; destruction of books.
 Klerksdorp Proprietary Mines, Ltd., Johannesburg; reduction of capital.
 Chicory, Ltd., Johannesburg; confirmation of agreement.

NOTICES OF CHANGE OF ADDRESS.

The Union-Castle Mail Steamship Company, Ltd., care L. Clarence, corner Loveday and Commissioner Streets, Johannesburg.
 Houtpoort, Ltd., care J. S. Richardson, 151-152 Stock Exchange Buildings, Fox Street, Johannesburg.
 E. W. Warby & Company, Ltd., 97 Gordon Road, Judith's Paarl.
 George Stott & Company, Ltd., Sites 2.9 and 20 Wemmer Industrial Township, Village Main Reef Area, Eloff Street Extension, Johannesburg.
 Newtown Livestock Auctioneers, Ltd., corner Bree and Melville Streets, Newtown.
 K. Sundarjee, Ltd., 29 Ferreira Street, Johannesburg.
 George Smith & Company, Ltd., Chorlton Chambers, Harrison Street, Johannesburg.
 The Lee Boot Factory, Ltd., 52a Bree Street, Johannesburg.
 The Premier African Meat Export and Cold Storage Company, Ltd., 19 Corporation Buildings, Rissik Street, Johannesburg.
 Premier Brokers, Ltd., 1 Exploration Buildings, Commissioner Street, Johannesburg.
 Mecca Tea and Coffee Company, Ltd., 1 Exploration Buildings, Commissioner Street, Johannesburg.
 J. W. Bell & Company, Ltd., 62a Plein Street, Johannesburg.

NOTICES OF INCREASES AND DECREASES OF CAPITAL.

Central Agency for Co-operative Societies, Ltd., Johannesburg; increased from £3,000 to £5,000.
 Sugdens, Ltd., Pretoria; increased from £12,000 to £17,000.
 Parry, Leon & Hayhoe, Ltd., Johannesburg; increased from £20,000 to £35,000.
 Geduld Proprietary Mines, Ltd., Johannesburg; increased from £1,009,826 to £1,150,000.
 Klerksdorp Proprietary Mines, Ltd., Johannesburg; decreased from £50,000 to £23,611 2s. 6d.

NOTICES OF LIQUIDATION.

The Small Estates, Ltd., Johannesburg; voluntary.
 Premier African Meat Export and Cold Storage Company, Ltd., Johannesburg; voluntary.
 Joseph & Company (Africa), Ltd., Johannesburg; voluntary.
 Union Basket Works, Ltd., Johannesburg; voluntary.
 Eastern Transvaal Asbestos Syndicate, Ltd., Johannesburg; voluntary.
 Sidat, Ltd., Johannesburg; voluntary.
 Kempton Park Organic Industries, Ltd.; by order of Court.
 Victoria General Investment Company, Ltd., Johannesburg; by order of Court.

INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

March 14.—Rhenoster Mines, Ltd.—Fourteenth Ordinary General Board Room, Jeppe Arcade, at 10 a.m.
 March 14.—East Rand Deep, Ltd.—Tenth Ordinary General, Board Room, Jeppe Arcade, at 10.15 a.m.
 March 14.—Geygerle, Ltd.—Seventeenth Ordinary General, Board Room, Jeppe Arcade, at 10.25 a.m.
 March 25.—Cassel Coal Co.—Lace Buildings, at 11.15.
 March 25.—Randfontein Deep, Ltd.—Sixteenth Ordinary General, Board Room, Consolidated Buildings, at 10.40 a.m.
 March 26.—Delagoa Bay Lands Syndicate, Ltd.—Sixteenth Ordinary General, Board Room, Consolidated Buildings, at 10.25 a.m.
 March 26.—Barrett's Rietfontein Syndicate, Ltd.—Ordinary General, Board Room, Consolidated Buildings, at 10.35 a.m.
 April 17.—Apex Mines, Ltd.—Twenty-second Ordinary General, Board Room, Fourth Floor, National Bank Buildings, at 11 a.m.
 April 22.—Princess Estates, at 3 p.m.
 April 23.—Modder Deep Levels, at 10 a.m.
 April 23.—Geduld Deep, at 3 p.m.
 May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.

Union Industries.

The blue book containing the report of the second annual census of "factories and productive industries" in the Union is a very interesting compilation. The first enumeration was for 1915-16 and the new one was for 1916-17, and a comparison between the returns reveals a notable expansion of activity. In the former year 3,908 establishments were found, but twelve months later the number had grown to 5,305, an increase of 1,397. The total capital invested in 1915-16 was £46,532,750, whilst in 1916-17 it amounted to £51,106,967, an increase of £4,574,217. The employees in 1915-16 were returned as numbering 101,178, and a year later the figure was 123,842, an increase of 22,664. The wages and salaries paid in 1915-16 totalled £8,912,857, and the figure for 1916-17 was £10,436,694, an increase of £1,523,837. The Europeans drew £6,739,966 in the former year and £7,760,674 in the latter. The average wage paid to whites in the Transvaal in 1916-17 was £246, Natal coming next was £205, the Free State third with £184, and the Cape last with £128. The highest district average was on the Rand, for which the figure for whites was £263. The average white wage over the whole Union, taking all the persons employed, men, women and boys, was £185, the average for Indians being £26, for natives £31, and for other coloured persons £47. The average on the Rand alone was £85 for Indians, £38 for natives, and £31 for other coloured persons. In the whole Union the value of the machinery, tools and plant employed in the factories was £17,878,633, whilst the land and buildings were returned as worth nearly £14,000,000. In the different processes the establishments used in 1916-17 material valued at £28,023,948, of which the South African material was valued at £13,731,251 and the other than South African at £14,292,697. The value of the articles produced and work done was given as £49,457,414, an increase of £9,022,532 on the 1915-16 return. The figures in the blue book are on the whole exceedingly encouraging. There is no reason why, given a period of industrial expansion and development, the next statistics should not show an even better state of affairs.

"T.C.L." MINING AND PROSPECTING ACTIVITY.

Latest Results from Groenfontein, Mutue Fides and Swaziland Tin—Results of Boring on Holfontein.

In the quarterly report for the period ended December 31, the "T.C.L." directors state that at the Groenfontein Tin Mine 1,124 tons of ore were crushed, producing 39 long tons of 72.3 per cent. concentrate, 10.75 long tons of 73.5 per cent. alluvial concentrate were also produced. The year's operations showed an estimated credit balance of £12,250, exclusive of an amount of £15,000 paid by the Zaaiploats Tin Mining Co., Ltd., for the freehold of a portion of alluvial tin-bearing ground on Groenfontein and Roodepoort. The main working faces continue to carry average exposures of ore. Operations were adversely affected during the quarter owing to an acute shortage of native labour as a result of the influenza epidemic. At the Mutus Fides Tin Mine ore treatment ceased on 19th November owing to scarcity of water. 678 tons of ore were crushed and 18 tons of 71.5 per cent. concentrate produced. The year's operations show an estimated credit balance of £25,000. The ore reserve at grass was estimated to contain 100 tons of 70 per cent. concentrate as at 31st December, 1918. The main tin faces maintained their size and grade throughout the quarter. Rains have partly replenished the dams and milling operations recommenced on 10th January, 1919. Operations were seriously affected during the quarter owing to the acute shortage of native labour as a result of the influenza epidemic, which caused many deaths.

MINING INTERESTS.

Penge No. 780, district Lydenburg: The tributors' operations at this mine are still suspended owing to shipping disabilities. The company contributed £100 towards the construction of a road to Lydenburg. Fairview (T.C.L.), Ltd.: The tributors crushed 3,473 tons, yielding 1,019 ozs. of gold during the quarter. Rietfontein No. 1,228, district Lydenburg: The tributors crushed 1,151 tons, yielding 273 ozs. gold during the quarter. They propose increasing the capacity of the plant to 2,000 tons per month. Holfontein: The third borehole encountered the Main Reef Leader on 28th November at a depth of 1,426 feet. One inch of reef with two inches of quartzite above and one inch of footwall slate below, four inches in all, assayed 1 dwt. per ton. Drilling has been discontinued. Swaziland Tin, Ltd.: 79.5 long tons of concentrate were produced during the quarter at an estimated profit of £806, the total profit for the year 1918 being £39,288. An interim dividend of 10 per cent. was declared for the half-year ended 31st December, 1918. Mount Morgan Mine: The tributors crushed 1,205 tons, yielding 111 ozs. gold during the quarter. All the above mining operations were severely hampered owing to the serious effects of the influenza epidemic.

TRIMO TOOLS.

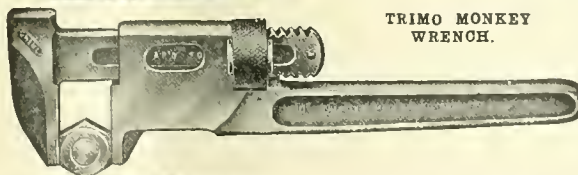
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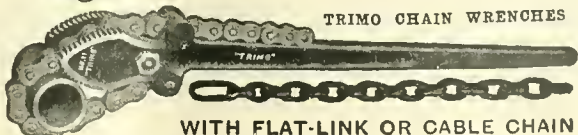


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TANDEM HORIZONTAL ENGINE, 10in. x 16in. x 24in., in Good Order. PRICE ...	£120	2 STIRLING BOILERS, 125 H.P., 140 W.P., in Good Condition. PRICE, F.O.R., EACH ...	£250
HORIZONTAL STEAM ENGINE, 12ft. x 24ft., in Good Order. PRICE ...	£50	FOWLER TRACTION ENGINE, 10 H.P., in Good Order. PRICE ...	£300
CORLESS TANDEM HORIZONTAL ENGINE, 10in. and 18in. x 30in., in Splendid Condition. PRICE ...	£150	TRAILERS. PRICE FROM £10 TO £20 EACH.	
STEAM WINDING ENGINE, by Ruston and Proctor, 12in. x 24in., 6 Drums, in Splendid Condition. PRICE ...	£300	1 GEARED TANGYE PUMP, 6in. x 12in., in Good Order. PRICE ...	£30
STEAM WINCH SINGLE DRUM, 6½in. x 9in., Ruston and Proctor, in Good Order. PRICE ...	£75	1 GEARED TANGYE PUMP, 5in. x 12in., in Good Order. PRICE ...	£25
HOIST, by Ransome, 10in. x 14in., 5 Drums, in Good Order. PRICE ...	£250	1 CLIMAX DEEP WELL PUMP HEAD. PRICE ...	£75
1 TANGYE OIL ENGINE, 5 H.P., in Good Working Order. PRICE ...	£55	1 GUNMETAL PUMP, Barrel 4½in. x 24in. PRICE ...	£15
1 TANGYE OIL ENGINE, 8 H.P., in Good Order. PRICE ...	£60	1 GATES CRUSHER, No. 1, in Good Order. PRICE ...	£50
1 GARDNER OIL ENGINE, 6 H.P., in Good Order. PRICE ...	£50	ELECTRIC LOCOS (2), 30 H.P., 24in. gauge, 220 V., D.C. PRICE, EACH ...	£50
3 LANCASHIRE BOILERS, 16ft. x 7ft., 140lbs., W.P., Condition as Good as New. PRICE, EACH ...	£400	NEW AIR COMPRESSORS, Belt Drive, 340 cub. ft. per minute. PRICE ...	£320
1 HEINE BOILER, 150 H.P., 140lbs., W.P., in Good Order. PRICE, R.O.R. ...	£250	140 cub. ft. per minute. PRICE ...	£145
		SUCTION GAS ENGINE, National, 8 H.P., Condition as New. PRICE ...	£180
		3in., 4in. and 5in. PIPES.	

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TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Crushing and Profit Returns for Six Months.—Compiled from Chamber of Mines' Statements.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax, Miners' Pithilis Contributions, etc.

AURORA WEST.

Capital: £106,353 (10s. shares).

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	14,350	16,260	22 8	21 2
September	13,600	15,653	23 0	22 0
October	12,700	14,043	21 2	23 4
November	11,800	12,624	21 5	24 9
December	10,700	10,789	20 0	25 6

1919.				
January	12,000	10,985	18 4	23 8
				* Loss.

BANTJES CONSOLIDATED.

Capital: £502,306.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	19,500	23,256	23 3	23 11
September	20,150	25,329	25 2	23 6
October	18,150	23,617	26 0	23 2
November	21,000	25,724	24 6	17 4
December	7,130	12,909	35 2	18 10

1919.				
January	3,050	4,409	28 11	21 11
				* Loss.

BRAKPAN MINES.

Capital: £850,000; issued £791,100.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	55,000	93,302	34 7	23 2
September	51,000	87,558	34 3	25 0
October	49,000	81,748	33 3	26 5
November	45,000	80,507	35 9	26 4
December	44,000	85,052	38 7	26 2

1919.				
January	42,000	86,241	41 0	25 11

CITY DEEP.

Capital: £1,250,000.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	57,500	106,679	36 11	24 3
September	52,500	100,280	37 9	25 1
October	49,500	92,159	37 3	28 2
November	46,500	88,731	38 2	30 6
December	45,000	91,127	40 6	29 7

1919.				
January	45,500	91,415	40 2	28 11

CITY AND SUBURBAN.

Capital: £1,360,000 (£4 shares).

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	20,543	32,491	31 8	31 0
September	17,005	27,627	31 9	36 5
October	19,053	30,974	32 6	32 0
November	16,490	33,413	40 2	37 10
December	15,945	31,624	39 8	39 2

1919.				
January	15,579	28,765	36 11	39 9
				* Loss.

CONSOLIDATED LANGLAAGTE.

Capital: £950,000.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	43,000	56,240	26 0	19 3
September	39,000	53,194	27 3	20 8
October	40,000	50,301	25 0	20 3
November	36,600	47,906	26 1	21 4
December	37,400	47,587	24 6	20 9

1919.				
January	41,300	51,641	25 0	20 9

CONSOLIDATED MAIN REEF.

Capital: £1,247,602.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	53,150	74,352	28 0	23 9
September	48,400	71,731	29 8	25 2
October	46,310	69,799	29 4	25 11
November	41,700	62,985	30 3	28 1
December	43,420	65,436	30 2	27 5

1919.				
January	41,310	68,367	30 10	27 7

CROWN MINES.

Capital: £940,106 (10s. shares).

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	161,000	226,994	28 2	22 8
September	156,000	224,865	28 3	23 5
October	147,000	206,788	28 0	23 3
November	134,000	188,620	28 1	25 3
December	132,000	195,379	29 5	25 11

1919.				
January	140,000	205,110	29 4	26 4

DURBAN ROODEPOORT DEEP.

Capital: £440,000.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	25,500	40,086	31 5	28 9
September	24,200	35,719	29 1	28 0
October	25,600	38,518	30 1	27 9
November	25,300	38,399	30 4	28 2
December	26,200	38,969	29 5	26 9

1919.				
January	23,200	34,908	30 1	30 3
				* Loss.

EAST RAND PROPRIETARY MINES.

Capital: £2,445,897.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	113,000	137,019	24 3	23 5
September	93,000	112,034	24 1	27 6
October	113,000	131,769	23 4	21 0
November	112,000	142,630	25 5	22 10
December	115,000	137,792	24 0	21 5

1919.				
January	115,000	146,424	25 3	23 0
				* Loss.

FERREIRA DEEP.

Capital: £980,000.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	38,900	68,843	35 5	22 8
September	36,400	54,940	30 2	24 2
October	38,700	59,965	31 0	24 2
November	33,950	59,252	34 11	26 9
December	35,500	57,259	32 3	24 11

1919.				
January	37,240	62,021	32 4	24 10

GEDULD PROPRIETARY.

Capital: £970,000.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	45,600	65,475	28 9	19 11
September	43,000	63,682	29 1	20 10
October	41,500	61,647	29 9	20 11
November	41,000	60,794	29 8	20 3
December	42,500	62,471	29 5	19 9

1919.				
January	42,900	63,402	29 7	20 0

GELDENHUIS DEEP.

Capital: £585,753.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	43,400	54,277	25 0	27 0
September	47,318	55,348	23 1	23 5
October	48,100	57,833	24 1	22 11
November	45,300	54,978	24 3	24 2
December	47,000	55,679	23 8	23 9

1919.				
January	47,400	55,968	23 7	24 0
				* Loss.

GOVERNMENT AREAS (MODDER).

Capital: £1,400,000.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	s. d.	£ s. d.
1918.				
August	118,500	201,933	33 10	19 9
September	117,500	202,952	31 3	19 9
October	114,500	200,183	35 0	20 2
November	100,000	187,274	36 11	21 6
December	93,000	171,838	36 6	21 11

1919.				
January	106,500	188,344	35 4	21 5

GLYNN'S LYDENBURG.

Capital : £170,000.

		Revenue.		Cost.	Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.
1918.						
August	4,110	9,307	15 3	25 6	3,872	18 10
September	4,201	8,975	42 9	23 0	3,949	18 10
October	2,604	5,331	40 11	32 0	1,056	8 1
November	540	1,096	—	—	*1,330	—
December	1,318	2,239	34 0	44 2	*726	11 0
1919.						
January	2,784	4,126	29 8	—	20	0 2
		* Loss.				

* Loss.

JUPITER.

Capital : £1,014,200.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	24,200	32,665	27 0	23 0	4,264	3 6
September	25,200	28,800	22 10	21 3	1,734	1 5
October	21,900	26,990	24 8	25 5	*1,391	1 3
November	20,600	24,841	24 0	25 1	*1,466	1 5
December	23,200	28,961	25 0	22 11	1,913	1 8
1919.						
January	26,400	27,908	21 2	21 1	*330	0 3

* Loss.

KNIGHT CENTRAL.

Capital : £900,000.

		Revenue		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
August	24,250	33,532	27 8	25 6	2,047	1 8	
September	24,500	33,043	26 5	23 5	3,564	2 11	
October	23,750	29,921	25 2	23 0	2,014	1 8	
November	20,500	27,122	26 6	25 2	778	0 9	
December	17,350	27,355	30 1	29 2	1,480	1 9	
1919.							
January	17,900	27,377	30 7	29 5	996	1 1	

KNIGHTS DEEP.

Capital : £743,526.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	86,400	c73,813	16 11	16 7	2,612	0 7
September	83,100	70,449	17 0	16 6	683	0 2
October	75,500	d63,487	16 10	18 10	*7,489	2 0
November	75,900	65,572	17 3	18 5	*5,512	1 5
December	78,000	61,324	15 9	17 6	*7,941	2 0
1919.						
January	85,300	70,262	16 6	16 7	*464	0 1

* Loss.

(c) In addition, £1,869 taken from reserve.
 (d) In addition, £1,448 taken from reserve.

LANGLAAGTE ESTATE.

Capital : £886,500.

		Revenue.		Cost.		Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.	
1918.							
August	49,000	61,732	25 2	19 2	14,849	6 1	
September	49,200	61,027	24 9	18 1	16,411	6 8	
October	46,940	59,519	25 3	19 2	14,421	6 2	
November	44,260	56,291	25 5	19 4	13,519	6 1	
December	44,190	54,783	24 9	18 10	13,113	5 11	
1919.							
January	45,170	55,634	24 3	18 10	13,051	5 9	

LUIPAARDSVLEI ESTATE.

Capital : £472,612.

	Revenue.			Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	22,230	23,286	20 11	20 0	579	0 6
September	20,230	21,400	21 2	21 5	*783	0 9
October	19,440	19,336	19 11	22 0	*2,421	2 6
November	18,690	18,962	20 3	21 8	*1,695	1 10
December	19,350	20,122	20 8	21 6	*1,051	1 1
1919.						
January	19,560	21,391	21 10	22 6	*888	0 11

* Loss.

MEYER AND CHARLTON.

Capital : £200,000.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	11,320	11,857	73 11	28 2	25,312	41 9
September	11,480	38,527	67 1	27 7	22,099	38 6
October	12,111	10,698	67 0	27 1	23,645	38 11
November	13,000	10,293	62 0	24 5	23,832	36 8
December	13,635	39,763	58 0	23 0	23,518	34 6
1919.						
January	12,750	39,178	61 11	25 8	22,545	35 4

MODDER "B."

Capital : £700,000.

1918.		Revenue.		Cost.		Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.	
August	58,000	115,334	39 9	18 3	60,013	20 8	
September	57,000	114,935	40 4	19 1	58,434	20 6	
October	56,500	116,621	41 3	19 11	57,827	20 6	
November	56,300	109,455	38 6	19 8	51,244	18 2	
December	57,000	113,423	39 7	20 6	52,703	18 6	
1919.							
January	58,000	127,755	44 1	21 7	65,026	22 5	

MODDER DEEP.

Capital : £500,000.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	44,200	85,406	38 9	17 4	47,072	21 4
September	41,300	85,108	41 3	18 0	47,671	23 1
October	42,100	86,960	41 4	17 5	49,997	23 9
November	41,000	84,092	41 0	17 8	47,580	23 3
December	40,900	84,577	41 0	18 0	47,515	23 3
1919.						
January	44,400	88,888	40 0	16 11	51,013	23 0

NEW GOCH.

Capital : £550,000.

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
August	18,600	16,880	17 8	17 10	525	0 7	
September	16,650	15,406	18 2	19 1	76	0 1	
October	16,050	14,005	17 3	19 2	*1,375	1 9	
November	15,200	13,147	16 10	19 8	*990	1 4	
December	15,150	13,015	17 0	18 2	*501	0 8	
1919.							
January	14,300	13,491	17 10	19 3	*98	0 2	
		* Loss.					

* Loss.

NEW HERIOT.

Capital : £115,000.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	12,300	16,719	27 2	27 1	*270	0 5
September	12,300	16,197	26 4	27 4	*978	1 7
October	11,800	16,371	27 9	27 6	*181	0 4
November	11,200	15,632	27 11	28 2	*480	0 10
December	11,100	16,439	29 6	27 8	791	1 5
1919.						
January	11,900	15,067	25 4	26 11	*1,128	1 11

* Loss.

NEW KLEINFONTEIN.

Capital : £1,300,000.

Revenue.		Cost.		Profit.		
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	60,600	76,752	25 4	23 3	6,127	2 0
September	55,700	75,567	27 2	25 7	2,512	0 11
October	52,820	73,193	27 9	27 1	62	—
November	46,440	62,217	26 9	27 4	*2,633	1 2
December	47,200	57,569	23 8	25 2	*3,287	1 5
1919.						
January	45,740	57,769	25 3	27 7	*6,145	2 8
* Loss.						

* Loss.

NEW MODDERFONTEIN.

Capital : £1,400,000 (£4 shares).

Capital: £215,000 (21 shares).						
		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
August	72,000	165,848	45 10	20 3	90,171	25 1
September	72,000	170,241	47 3	21 3	90,191	25 1
October	73,000	167,909	46 0	20 3	90,485	24 9
November	73,000	167,650	45 11	20 3	90,318	24 9
December	70,000	159,370	45 6	20 3	85,062	24 4
1919.						
January	76,000	170,181	44 9	20 3	91,271	24 0

Capital : £325,000.

Capital £ 250,000.		Revenue.		Cost.		Profit.	
1918.	Tons	£	s. d.	s. d.	£	s. d.	
August	18,400	16,600	17 4	16 5	1,473	1 7	
September	18,000	15,861	17 7	16 0	1,461	1 7	
October	17,400	15,899	18 3	16 10	1,271	1 6	
November	17,000	15,355	17 5	16 6	1,306	1 6	
December	17,800	15,993	18 0	16 7	1,208	1 4	
1919.							
January	17,300	16,345	18 11	17 7	1,138	1 4	

NEW UNIFIED.

Capital : £250,000.

		Revenue.		Cost.		Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.	
1918.							
August	13,600	12,781	18 10	14 11	2,616	3 11	
September	12,400	12,021	18 9	15 5	2,446	3 11	
October	12,100	12,221	20 2	16 6	2,245	3 9	
November	12,100	11,800	19 6	15 11	2,167	3 7	
December	13,100	12,165	18 7	14 10	2,415	3 9	
1919.							
January	13,100	12,293	18 4	15 1	2,189	3 3	

NOURSE MINES.

Capital : £827,821.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	13,100	56,826	26 4	24 4	3,133	1 5	
September	40,600	51,609	26 11	25 6	1,779	0 11	
October	38,350	53,487	27 11	26 6	1,611	0 10	
November	34,500	45,791	26 7	27 7	*1,288	2 6	
December	31,200	44,852	28 6	30 5	*3,640	2 4	
1919.							
January	35,000	50,098	28 8	27 11	561	0 4	

* Loss.

RANDFONTEIN CENTRAL.

Capital : £4,500,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	137,000	164,120	23 9	23 8	2,162	0 4	
September	138,000	175,270	22 1	19 7	20,505	2 7	
October	140,000	159,455	22 7	22 9	93	—	
November	133,000	147,358	22 2	22 11	*5,010	0 9	
December	118,200	128,363	21 5	23 9	*11,894	2 0	
1919.							
January	143,000	160,900	22 6	21 4	8,293	1 2	

* Loss.

ROBINSON.

Capital : £2,750,000 (£5 shares).

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	41,300	49,728	24 1	19 2	9,270	4 6	
September	36,100	51,737	23 8	20 4	5,255	2 11	
October	36,800	40,128	21 10	20 8	1,329	0 9	
November	35,000	42,749	24 5	21 7	4,012	2 4	
December	36,100	44,248	24 6	21 6	1,467	2 6	
1919.							
January	38,500	45,442	23 7	21 0	4,779	2 6	

ROBINSON DEEP.

Capital : 681,807 "B" shares, £1 each, and 500,000 "A" shares, 1s. each.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	47,000	61,485	27 5	26 6	990	0 5	
September	38,200	51,737	27 1	29 5	*4,744	2 6	
October	40,200	52,735	26 3	28 9	*5,967	3 0	
November	40,500	54,694	26 11	28 0	*3,139	1 7	
December	39,400	54,749	27 9	28 0	*1,450	0 9	
1919.							
January	35,200	51,075	29 0	31 8	*5,351	3 0	

* Loss.

ROODEPOORT UNITED.

Capital : £460,000.

	Tons.	Revenue.		Cost.		Loss.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	26,468	24,909	18 6	20 9	2,491	1 11	
September	22,000	21,472	18 10	23 3	4,130	3 9	
October	21,900	19,421	17 5	24 4	7,241	6 7	
November	24,000	22,275	18 6	22 2	3,867	3 3	
December	24,000	22,589	17 11	21 1	2,460	2 1	
1919.							
January	24,000	23,736	19 4	20 8	*966	9 10	

* Loss.

ROSE DEEP.

Capital : £700,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	54,000	64,128	23 9	18 1	14,031	5 2	
September	48,600	54,205	22 4	18 7	7,993	3 3	
October	49,300	55,072	22 4	19 8	5,374	2 2	
November	46,400	53,823	23 2	19 10	6,779	2 11	
December	44,300	51,487	23 3	20 2	5,663	2 7	
1919.							
January	48,000	54,940	22 10	19 6	7,846	3 3	

SIMMER AND JACK.

Capital : £3,000,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	59,800	65,394	21 10	18 1	10,187	3 5	
September	55,500	64,774	23 4	18 6	10,559	3 10	
October	49,900	56,299	22 7	20 9	3,542	1 5	
November	48,900	55,985	22 11	20 8	4,497	1 10	
December	45,700	49,554	21 7	20 6	5,803	2 6	
1919.							
January	44,100	49,057	22 3	21 2	2,504	1 2	

(c) Of this, £2,761 carried to reserve.

(d) In addition, £4,035 taken from reserve.

SIMMER DEEP.

Capital : £1,650,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	45,800	47,158	20 7	20 7	*806	0 4	
September	42,100	42,341	20 10	21 3	*2,719	1 4	
October	41,500	46,334	20 10	21 9	*2,869	1 3	
November	42,400	40,460	19 0	22 9	*8,529	4 0	
December	43,100	48,420	22 6	21 8	911	0 5	
1919.							
January	43,800	48,135	22 3	22 5	*947	0 5	

* Loss.

SUB NIGEL.

Capital : £775,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	9,700	28,060	57 10	37 7	9,298	19 2	
September	9,600	28,889	60 2	37 4	9,369	19 6	
October	9,950	24,191	48 8	32 7	7,517	15 1	
November	9,100	26,349	57 11	38 2	8,466	18 7	
December	9,700	25,746	53 1	36 6	7,569	15 7	
1919.							
January	9,100	26,149	57 6	41 2	7,105	15 7	

(a) Of this, £1,020 carried to reserve.

SPRINGS MINES.

Capital : Authorised, £1,500,000; registered, £1,300,000; issued, £1,153,500.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	41,170	87,546	42 6	22 5	40,354	19 7	
September	39,100	86,683	44 4	23 3	40,323	20 8	
October	35,450	73,383	41 5	23 11	31,748	17 11	
November	32,000	72,343	44 6	24 6	32,446	20 3	
December	28,800	68,108	47 4	25 9	30,200	21 0	
1919.							
January	33,350	73,320	44 0	25 3	30,287	18 2	

TRANSVAAL G.M. ESTATES.

Capital : £604,225.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	15,040	23,688	31 6	23 6	5,614	7 6	
September	15,340	26,124	34 1	23 1	8,131	10 7	
October	13,630	25,482	31 10	25 8	8,107	12 4	
November	475	3,075	—	—	*5,212	—	
December	3,550	4,915	27 8	64 1	*6,508	36 8	
1919.							
January	11,380	14,455	25 5	29 9	*2,780	4 11	

* Loss.

VAN RYN.

Capital : £500,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	32,800	35,498	21 8	17 7	6,579	4 0	
September	33,400	36,258	21 9	17 4	7,016	4 3	
October	33,800	36,153	21 1	17 7	6,147	3 8	
November	32,000	33,816	20 11	17 7	5,544	3 6	
December	32,300	32,550	19 10	17 6	4,063	2 6	
1919.							
January	32,600	32,011	19 6	16 11	4,133	2 6	

VAN RYN DEEP.

Capital : £1,196,892.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	48,300	105,178	43 7	21 2	54,114	22 5	
September	45,400	97,940	42 6	21 4	49,391	21 9	
October	47,750	98,505	41 3	20 7	49,364	20 8	
November	42,350	94,932	44 10	21 6	49,469	23 4	
December	40,800	94,389	46 3	23 2	47,145	23 1	
1919.							
January	42,900	95,748	44 8	22 8	47,179	22 0	

VILLAGE DEEP.

Capital : £1,060,671.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August	48,800	71,154	29 2	24 9	9,274	3 10	
September	44,200	66,350	30 0	26 11	5,643	2 7	
October	40,900	58,037	28 5	28 1	*671	0 4	
November	38,200	53,050	27 9	30 11	*7,164	3 9	
December	46,800	65,139	27 7	24 2	6,919	2 11	
1919.							
January	48,200	65,886	27 4	25 5	4,262	1 9	

* Loss.

VILLAGE MAIN REEF.

Capital : £472,000.

Capital : £42,000.		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
August	21,500	28,851	26 10	23 8	2,840	2 9	
September	20,800	31,573	30 1	22 11	7,054	6 9	
October	21,300	28,804	27 1	21 9	4,995	4 8	
November	19,800	26,548	26 10	22 2	1,029	4 1	
December	17,600	25,877	29 4	25 10	2,508	2 10	
1919.							
January	18,200	25,729	28 2	25 11	2,434	2 9	

WEST RAND CONSOLIDATED.

Capital: £2,004,424.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August ...	32,150	36,781	22 3	19 11	2,034	1 3	
September ...	29,080	34,746	23 9	23 2	795	0 7	
October ...	27,150	31,225	22 9	24 7	*2,252	1 8	
November ...	25,000	26,994	21 6	25 9	*5,162	4 2	
December ...	28,400	32,117	22 6	23 6	*1,395	1 0	
1919.							
January ...	30,500	36,259	23 8	22 11	1,159	0 9	

WITWATERSRAND.

Capital: £475,000; issued, £469,625.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August ...	36,350	41,224	22 8	19 8	5,551	3 1	
September ...	35,000	40,052	22 11	19 9	5,521	3 2	
October ...	34,000	37,715	22 2	20 0	3,711	2 2	
November ...	31,005	35,851	22 9	20 10	3,492	2 3	
December ...	33,321	37,851	22 6	20 3	4,086	2 5	
1919.							
January ...	35,500	38,157	21 2	19 10	2,881	1 7	

WITWATERSRAND DEEP.

Capital: £550,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August ...	33,130	38,650	23 1	22 1	517	0 4	
September ...	29,000	36,429	25 1	24 4	352	0 3	
October ...	28,730	35,107	24 5	25 9	*2,593	1 10	
November ...	28,120	31,454	22 2	26 4	*6,237	4 5	
December ...	26,400	32,644	24 4	26 2	*2,577	1 11	
1919.							
January ...	27,580	35,800	26 0	27 7	*1,958	1 5	

* Loss.

WOLHUTER.

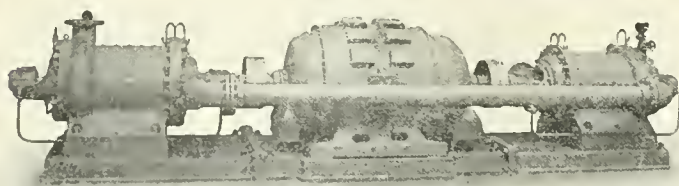
Capital: £860,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
August ...	33,450	38,990	23 1	20 3	4,422	2 8	
September ...	32,150	38,752	24 1	20 10	5,031	3 2	
October ...	31,550	35,830	22 9	20 1	3,459	2 2	
November ...	29,270	35,124	24 0	20 7	4,319	2 11	
December ...	27,300	37,308	27 4	22 11	5,278	3 10	
1919.							
January ...	29,250	35,792	24 6	21 5	4,345	3 0	

SULZER

HIGH-LIFT CENTRIFUGAL PUMPS.

For Mine Drainage, Waterworks, Etc.



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THE DIAMOND MARKET IN THE U.S.A.

Half the World's Supplies Absorbed—Some Notable Changes—Conditions Never Better.

A RECENT cable stated that the National Bank of New York estimates that over one thousand million dollars value in diamonds, equalling half the world's stock, is at present in the United States. In this connection it may be of interest to reproduce the following, which recently appeared in a financial paper:—Importation of diamonds into the United States shows a marked change during the war period. Prior to 1914 about two-thirds of the diamonds imported were classed as "cut but not set," while only about one-third of the total value were classed as "uncut." The diamond cutting of the world was carried on prior to the war chiefly in Netherlands, Belgium and France, and that industry was of course entirely suspended in Belgium, in considerable part in France, and also materially affected in Netherlands. As a consequence the value of cut diamonds imported into the United States dropped from 27,000,000 dollars in 1913 to 18,000,000 dollars in 1914 and 9,000,000 dollars in 1915. By 1916 the uncut diamonds began plainly to take the place of cut diamonds in the importations, and in 1918 for the first time showed a greater value in imports than those classed as "cut but not set." In the very latest period, the eight months ending with September, 1918, the imports of uncut diamonds amounted to 10,424,000 dollars, and the group "cut but not set" 6,501,000 dollars. With the reduction in importation of cut diamonds and increase in that of the uncut has also come a change in the countries from which imported. Prior to the war only a small portion

of the diamonds entering the United States came by way of Great Britain, although 98 per cent. of the world's diamonds are produced in her South African colonies. Of the 25,000,000 dollars' worth of diamonds imported in the fiscal year 1914, all of which preceded the war, only about 6,000,000 dollars' worth came from Great Britain, nearly 10,000,000 dollars' worth from Belgium, approximately 8,000,000 dollars' worth from Netherlands, and about 2,000,000 dollars' worth from France. By 1917 the supply from Belgium had entirely terminated, that from France was only 1,500,000 dollars' value, and that from England about 13,000,000 dollars, as against 6,000,000 dollars at the beginning of the war. The increase in importations from England occurred almost exclusively in the uncut diamonds which she had apparently drawn direct from her South African colonies and sent in the uncut form to the United States, which has of late actively developed the diamond cutting industry. The value of the diamonds in the United States at the present time is apparently more than 1,000,000,000 dollars. As early as 1900 a distinguished diamond expert of the United States said: "It may be safely said that 500,000,000 dollars' worth of diamonds are owned in the United States," and a compilation just made by The National City Bank of New York shows that the value of diamonds imported since 1900 is 506,000,000 dollars. This alone would bring the total value of the diamonds of the country above the billion dollar line, but when it is remembered that 175,000,000 dollars' worth of the diamonds imported since 1900 came in the uncut state, and that their value was doubled by the cutting process which occurred within this country, it is apparent that the value of the stock in the country is considerably more than 1,000,000,000 dollars, to say nothing of the further fact that prices of diamonds have increased materially during the war. About one-half of the world's diamonds are now apparently owned in the United States. An estimate made in 1900 by the authority above quoted put the value of the world's stock of diamonds at rather more than 1,000,000,000 dollars, and indicated that the United States then owned about one-third of the total known stock. With the rapid additions to our own stock through the importation of 506,000,000 dollars' worth since 1900 it seems probable that fully one-half of the world's stock of diamonds is now held in the United States.



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THE WEEK IN THE SHAREMARKET.

From Bad to Worse—General Uneasiness.

The volume of business was somewhat greater on Saturday morning, but prices were all lower, with the exception of small advances in Modder Easts and their Options. The remainder of the group went weaker, as also all the other leading stocks. The market weakened again on Monday and the volume of business was much decreased. Van Ryn Deeps and New Eras were firm, and there were some fairly large purchases in Daggafonteins and Springs West. South Westerns came 85s.—90s. There was somewhat more activity at the call on Tuesday, with small advances in New States, Modder B, Modder East and Sub Nigel, and a fall in City Deeps, Government Areas and Portland Cements. The remainder were unchanged. The stable broker bid 87s. 6d. for South Westerns. The market weakened in the afternoon. At the call on Wednesday there was not one redeeming feature from A to Z. Just one long record of falling prices, in which Springs Mines took the lead, closing sellers at 60s. Prices continued weak throughout the day, except that the fall in Springs was checked and they finished at 60s. 3d., at which price they were maintained from after the call. South Westerns were about 85s. on the average, and 20s. was paid on 90s. for a 30-day call. Thursday brought a repetition of the previous day's performance, accentuated by a further call, City Deep being the only stock that did not show further weakness. South Westerns were unchanged. The outside dealings were limited to sales of Makganyenes from 43s. 6d. to 46s.; Union Tin, 4s. 6d.; Monteleo, 11s.; Henderson's Estates, 5s.; Compound Diamonds, 2s. 4d.; New Farms, 1s. 10d.; Phoenix, 11d. Sellers of Mauss Syndicates, 40s.

On Friday morning the rot was stayed in most of the stocks, though Springs are still a very weak feature. The following shows the alteration in prices:—Sales: Geduld Props., 43s. 6d.; Government Areas, 91s.; Knight Centrals, 5s. 7d.; Modder B., £7 13s.; Modder East, 18s.; 4-year Options, 5s. 5d.; Kleinfontein, 11s. 9d.; Southern Van Ryn, 9s.; Springs Mines, 57s. and 57s. 3d.; Van Ryn Deep, 66s.; Nourse Mines, 13s. Buyers and sellers: Brakpan, 62s. 6d. seller; Glynn's Lydenburg, 21s.—22s. 6d.; Geduld Options, 11s. 3d.—11s. 9d.; Modder East, 3-year Options, 4s. 4d.—4s. 6d.; Princess, 2s. 10d.—3s.; Roberts Victor, 9s. 6d. buyer; Sub Nigel, 20s. 9d.—21s.; Wit, Deep, 10s. 6d.—11s. 3d.; B.S.A., 18s.—20s. 6d.; Zaaipplaats, 11s. 6d.—12s.

	Fri., 28th.	Sat. 1st.	Mon., 3rd.	Tues., 4th.	Wed., 5th.	Thurs., 6th.
African Farms ...	14 9	14 0†	14...6	14...0†	14 3*	13 9
Anglo-Amer. Corp. ...	25 0†	30 0*	25 0†	29 0*	29 0*	28 0*
Apex Mines ...	6 6	6 6†	6 6†	6 9	6 6†	6 7†
Bantjes Cons. ...	1 9†	1 10	1 10†	1 10†	1 10†	1 10
Brakpan Mines ...	65 0	62 6†	62 6†	62 6†	62 6†	62 6†
Breyton Colls. ...	—	—	11 9†	—	11 6†	—
British South Africa	21 0*	21 0*	21 0*	21 0*	—	—
Bushveld Tins ...	—	0 11*	0 10*	0 10*	—	0 10*
Cinderella Cons. ...	3 9†	3 9†	3 6†	—	—	3 6
City and Subs. ...	7 3†	7 3	7 0†	7 0†	7 0†	—
City Deeps ...	55 0*	54 0†	53 0†	52 0†	52 6†	52 6†
Clydesdale Colls. ...	23 6	—	22 6†	23 0†	23 6†	23 6†
Con Investments ...	23 9†	25 0	—	—	2 3 0†	24 0†
Con. Langlaagtes ...	18 0†	18 0†	18 0†	18 0†	18 0†	—
Con. Main Reefs ...	10 6†	11 0	10 6†	10 9†	10 9†	10 6†
Con. Mines Select. ...	24 0†	—	—	—	26 0*	—
Coronation Frechds. ...	1 1†	1 1†	1 1†	1 2	1 1†	1 1†
Crown Diamonds ...	13 10†	14 0	14 0	13 9	13 6†	12 0
Daggafontein Mines	25 0†	25 0	25 0	24 9	—	22 6†
Do. Options ...	5 6†	5 6	5 9*	5 3*	4 0	4 0*
East Rand Coals ...	2 3†	2 4	2 2†	—	2 1†	2 0†
East Rand Deeps ...	0 9†	0 9†	0 9†	0 10†	0 10†	1 0*
E.R. Minings ...	18 0	18 0	17 6†	17 6†	17 9†	18 6*
East Rand Props. ...	6 0†	6 6	6 3†	6 0	6 0*	—
East Rand Debs. ...	£70†	—	£70	—	—	—
Eastern Golds ...	1 3	—	1 6*	1 0†	1 3	—
Frank Smith Dia. ...	3 8	3 10†	3 11†	3 5†	3 8†	3 8
Geduld Props. ...	45 3	44 9†	44 6	44 6	44 0	43 3
Glencoe Colls. ...	6 0†	0 0†	—	—	—	—
Glynn's Lydenburgs	25 0*	—	—	—	—	—
Government Areas	94 0	94 3	93 6	93 0	92 0	90 6

	Fri., 28th.	Sat., 1st.	Mon., 3rd.	Tues., 4th.	Wed., 5th.	Thurs., 6th.
Jhb. Bd. of Execut. ...	30 0†	30 0†	30 0†	30 0†	—	30 0†
Jupiters ...	4 7†	4 7†	4 7†	4 6†	4 6†	4 6†
Klerksdorp Props. ...	1 1†	1 1†	—	1 1†	1 0†	1 1†
Knight Centrals ...	5 9†	5 10	5 9†	5 9†	5 9	5 6
Lace Props. ...	21 9†	21 6†	21 6	21 6	21 0†	20 6
Leeuwoort Tins ...	22 0†	21 9†	21 9†	21 3†	20 9†	22 0
Luipaardsvlei Est. ...	1 6†	—	—	2 0†	2 0	2 0†
Lydenburg Farms. ...	8 6†	8 6†	8 6†	—	8 6	8 6†
Middlevlei Est. ...	1 0†	1 0†	1 1†	—	1 0†	—
Modder B.'s ...	160 0	159 6	155 0†	157 6	157 0	—
Modder Deep ...	145 0†	145 0†	142 6†	147 6*	142 0	—
Modder Easts ...	18 3	18 7½	18 0†	18 3	17 9	17 6
Do. Options (3 yrs.) ...	4 1	4 3	4 0†	4 2†	4 1	4 0
Do. Options (4 yrs.) ...	5 4†	5 5	5 1†	5 6	5 6	5 1†
Hume Pipes ...	28 0†	27 6†	27 6†	27 6	27 6	27 6†
De Beers Cons. ...	£17 10†	—	—	—	—	—
Natal Naviga. Colls. ...	21 0†	21 0†	22 0	21 6†	—	—
National Banks ...	£15*	£14 12,6	£15*	£15	—	—
New Boksburgs ...	1 0†	1 0†	1 0†	1 0†	1 0†	1 0†
New Eland Diam. ...	25 0†	24 6†	—	24 0†	24 0†	21 0†
New Era Cons. ...	9 6	9 7	9 6†	9 9*	9 8*	—
New Geduld Deeps ...	—	5 9†	6 0†	6 0†	5 11†	5 10†
New Heriots ...	12 0†	12 0†	—	—	—	11 9†
New Kleinfonteins	12 6*	12 0	12 0†	12 3	12 3	12 0
New Modderfontein	£26 12,6	£26 5†	—	£26 5*	£26 5*	£25 10†
New Unifeds ...	—	—	3 6†	3 6†	3 6†	—
Nigels ...	4 0†	4 0†	4 0†	4 0†	4 0†	4 0†
Nourse Mines ...	—	13 0†	10 0†	12 9†	12 6†	10 9†
Premier Preferreds ...	—	160 0*	—	—	—	160 0*
Pretoria Cements ...	64 0†	64 0†	63 0†	64 0	62 0†	60 6†
Princess Estates ...	3 4*	3 0†	3 4*	3 3*	3 1†	3 0†
Rand Collieries ...	3 9*	3 9*	3 9*	3 9*	3 9*	3 9*
Rand Mines ...	—	—	—	—	60 0*	—
Rand Nucleus ...	1 10	2 0*	1 10	1 8†	1 7†	—
Rand Select. Corp. ...	75 0†	76 0	77 0*	76 0*	74 0*	72 6†
Randfontein Deeps ...	4 10†	4 9†	—	5 3*	5 3*	4 9†
Randfontein Est. ...	14 6†	15 0	14 9†	14 9†	14 6	—
Roberts Victor ...	—	—	12 0†	—	10 0†	—
Roosbergs ...	5 0†	5 9*	4 9†	4 9†	5 0†	4 9
Roodepoort Uniteds	3 3†	3 0†	—	—	2 0†	—
Ryan Nigels ...	3 3†	—	3 3†	3 3†	3 3†	—
Shebas ...	1 3†	1 3†	1 3†	1 3†	1 3†	—
Simmer Deeps ...	1 6†	1 6†	1 6†	—	1 6†	—
S.A. Breweries ...	33 0†	33 0†	33 0†	33 0†	33 0†	—
S.A. Lands ...	5 9†	5 11	5 10†	6 0	5 10†	—
Springs Mines ...	62 3	61 9†	61 9	61 9	60 0	—
Sub Nigels ...	22 0†	21 6†	21 9	22 0	21 6	—
Swaziland Tins ...	25 0*	—	—	—	—	25 0*
Transvaal Lands ...	—	25 0*	—	—	—	—
Trans. G.M. Est. ...	15 0†	15 9	16 0*	11 6†	15 6*	—
Van Ryn Deeps ...	66 6*	66 6	66 9	66 6	65 9	65 0†
Village Deeps ...	16 6†	16 3†	16 3†	16 3†	16 3†	16 3†
Welgedachts ...	—	—	—	27 6*	—	—
West Rand Cons. ...	3 0†	3 0†	—	3 0†	—	3 0†
Western Rand Est. ...	—	1 6†	1 6†	1 3†	—	—
Wit. Deeps ...	11 0	11 0†	—	11 0†	—	10 0†
Wolhuters ...	3 1†	—	3 0	3 2*	—	3 2
Zaaipplaats Tins ...	12 6*	—	12 9	12 9	12 8*	12 0
Union 5 per cent. ...	£103*	*102 16,3	£102 15†	£102 15†	—	£102 7,6†
New Local 5 per. ct. ...	£100†	£100	£100	£100 2,6†	£103*	£100 2,6†
New States ...	23 6	23 3†	23 6	23 9	23 6	23 0
S. Van Ryn ...	9 6†	9 9†	9 9	9 6†	9 6†	9 3†
S.A. Alkali ...	30 0†	32 6†	33 0†	33 0†	33 6†	—
Tweefontein Colls. ...	24 0	24 0†	24 0†	—	—	21 0†
Do. Pref. ...	22 6†	22 6†	—	—	—	21 0†
West Springs ...	25 3	24 9	24 6	24 6	—	23 0
Option ...	10 0†	9 9†	19 6†	9 9†	—	—

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THE MINERAL INDUSTRY OF SOUTH AFRICA AND ITS FUTURE.*—VI.

[By P. A. WAGNER, B.Sc., Ing.D.]

LIME.

A recent survey† has shown that the Union has very considerable resources of limestone, though the largest deposits unfortunately are rather unfavourably situated with regard to the principal industrial centres. The most important occurrence being worked at the present time is that near Taungs, which is estimated to contain 7,000,000 tons of high-grade limestone. There is also a considerable deposit near Potgietersrust, in which the limestone has resulted from the de-dolomitisation of the normal dolomite of the Transvaal system.‡ Pure cave limestone occurs in the dolomite at many localities. Until recently deposits of this type supplied the greater part of the pure lime used in the cyanide works on the Witwatersrand, and they still make an important contribution to the total output. Fairly considerable quantities of "blue" lime obtained from "burning" ordinary dolomite, are produced at Irene, Olifantsfontein, and other localities. It is used principally for building purposes. Arenaceous surface-limestone is very largely employed for the manufacture of cement.

ROCK PHOSPHATE.

There has now for nearly two years been a steady output of crushed rock phosphate from the deposits at Saldanha Bay. These are of great extent,† readily accessible, and capable of being cheaply worked; and are without doubt destined to afford the basis of a very important industry. The phosphate, an intimate mixture of aluminium and iron phosphates, has been formed mainly by the phosphatisation of granite and quartz porphyry detritus, and to a less extent by the phosphatisation of these rocks *in situ*. Though almost completely insoluble in ammonium citrate, it has practically demonstrated that the phosphate, if finely ground, has a very beneficial effect when applied together with finely-ground lime to soils poor in phosphorus, and to sour soils; the phosphorus being doubtless rendered assimilable by the agency of soil bacteria. It was early realised, however, that its efficiency as a fertiliser could be greatly increased by rendering the phosphoric acid more soluble and several processes to effect this have been devised. When one or other of the processes has been successfully applied, there should be a big increase in the output. There is also a small deposit of the more valuable calcium phosphate or phosphorite in the neighbourhood of Saldanha Bay on the Hoetjes Bay Peninsula, and this encourages the belief that further deposits of phosphorite remain to be discovered in this locality or along some other section of the littoral. As the soils of the Union are, generally speaking, very deficient in phosphorus, any discovery of this nature would be of the utmost importance. Another source of rock phosphate investigated by Du Toit‡ are the phosphatic nodules occurring in the Upper Ecca shales in the Weenen area and other localities in Natal. These contain from 20 to 30 per cent. of phosphoric acid, and have been proved experimentally to have considerable fertilising value when finely ground. Owing to their irregular and sparing distribution through the shale, operations will perforce have to be confined to the mere collecting of the nodules set free by weathering or still partially imbedded in the matrix. Du Toit is of opinion that there is enough of this material scattered over the Weenen area to enable a mill to operate with a small output for some time. With the experience gained it is suggested that other localities, such as the neighbourhood of Lady-smith, might with advantage be investigated.

* Being Presidential Address read before the S.A. Association for the Advancement of Science.

† Cf. Wybergh, W., and Du Toit, A. L.: *The Limestone Resources of the Union*, Geological Survey Memoir, No. 11, Union of South Africa.

‡ Cf. Young, R. B., *Trans. Geol. Soc. S.A.*, 1916, p. 57.

§ Cf. Du Toit, A. L.: *Report on the Phosphates of Saldanha Bay*, Memoir No. 10, Geological Survey, Union of South Africa.

¶ Cf. Du Toit, A. L.: *The Ecca Phosphates of Natal*, S.A. Journ. Industries, January, 1918.

§ Cf. *The Geology of the Cape Colony*, p. 178.

CHERT.

Chert, suitable for lining tube mills, has a wide distribution in the dolomite formation, and is won in the neighbourhood of Frederikstad, in the Potechefstroom district of the Transvaal. Owing to the introduction of steel and composite liners, the demand has fallen considerably, the output for 1917 having amounted to only 180 tons against 604 tons in 1913.

GYPSUM.

This mineral is principally used in South Africa in the manufacture of Portland cement, in which it acts as a retarder. There are important deposits at Ngbevu, in the Tugela Valley, in Natal, on the farm Vrede, in the Boshof district of the Orange Free State, and on the farm Bestpan, near Kimberley. The demand for gypsum is limited, and there is no likelihood of any great increase in production in the near future.

KIESELGUHR.

Kieselguhr occurs as an earthy deposit in the beds of certain pans in the Amsterdam district of the Transvaal; also near Krugersdorp, and in Griqualand West. It is used in admixture with asbestos for covering boilers and steam pipes, and for preparing brass and metal polish. There was a small production of the mineral in 1913, but, so far as I am aware, none of the deposits are being worked at present.

SALT.

The salt industry of the Union continues to make steady progress, though very little is heard of it, and information regarding recent progress is difficult to obtain. The whole of the output, amounting at the present time to nearly 60,000 tons per annum, is derived from salt-pans, most of which are located on the dwyka tillite or shales. The supply of salt, which owes its origin to a process of natural concentration, is constantly replenished, and the pans, as pointed out by Rogers and Du Toit,§ are undoubtedly among the most valuable assets of the country. For the actual production and refining of the salt, solar evaporation in shallow pans is generally relied upon. This system, while very economical, has the disadvantage that the output is dependent on weather conditions, being greatly diminished during the winter months, when very little evaporation takes place. To remedy this, some of the salt companies have of recent years supplemented their evaporating ponds by furnace-heated pans, which enable a fairly steady output to be maintained all the year round.

CEMENT, CLAY PRODUCTS, AND STRUCTURAL MATERIAL.

The value of the output of the industries under this heading amounted in 1917 to £877,934, an increase of £255,941, compared with 1913. This is due largely to the great expansion of the local cement industry, which is now supplying the whole of the rapidly-increasing South African requirements. The Union has three large cement factories, and the erection of two others is contemplated. The clay and pottery industries have also made very satisfactory progress, the cutting-off of oversea supplies having given a great impetus to the production of roofing tiles, stoneware, and fireclay goods. There is also a magnificent opening for the local manufacture of electrical insulators, sanitary ware, and crockery, and the ceramic industry appears altogether to be capable of very considerable expansion. The great shortages of bottles has led to the establishment of a bottle factory at Dundee, in Natal. The glass is obtained by melting broken bottles. The actual manufacture of glass is, however, also to be undertaken shortly, and for this purpose being available at several localities. It is to be hoped that this and other industries that have come into existence as a result of the existing conditions, will be adequately protected after the war, when it is probable that dumping on a colossal scale will be attempted.

(To be continued.)



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RHODESIAN & BELGIAN CONGO SECTION.

Charterland Recovering from the Epidemic—Value of Total Mineral Production to date close on £50,000,000—Improved Returns for January—The Shamva the Largest Producer—The Turkois Mine—Importance of the Lukuga Coal Fields.

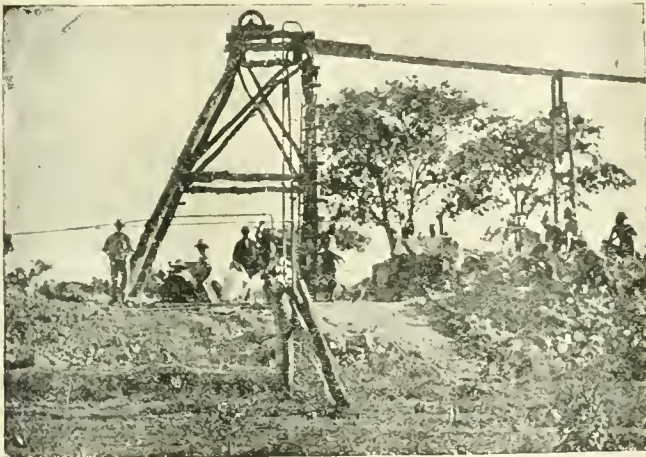
THE mineral output of Rhodesia for January of this year had a value of £268,143, and it is of interest to note that the total production of minerals in Southern and Northern Rhodesia to date stands at close on fifty million pounds sterling. The mining industry of Rhodesia was very hard hit by the influenza epidemic, which wrought havoc amongst large and small mines alike. A considerable number of European deaths took place, particularly in the outlying districts, and the native mortality was so great that several small propositions have closed down and are not likely to be reopened for some considerable time. The total value of the mineral production of the country in September last was £375,320, and thereafter operations were greatly curtailed and outputs declined substantially through the spread of the epidemic.

Only now does it become apparent that the mines are beginning to recover from the effects of the disease. It is encouraging to note that the gold output of the country for the month of January has been declared at 50,591 ounces, valued at £211,917, an increase of 4,577 ounces, valued at £19,047 as compared with the output for the month of December last. Of the total, Matabeleland contributed 28,733 ounces, valued at £119,882, and Mashonaland,

mine, which has been developed to the fourth level along a considerable strike, has been dewatered to the third level and preparations made for stoping and further development. In the meantime the old slimes dump is being treated with satisfactory results.

* * * *

The *African World's* Brussels correspondent, writing under date January 17, refers to the discovery by a joint expedition of the Geomines (Compagnie Geologique et Minière des Ingenieurs et Industriels Belges) and of the Simkat (Société Industrielle et Minière du Katanga) of a coal-bearing area on the Elisabethville-Bukana section of the Cape to Cairo Railway, which has been worked since the early summer of last year, and which is 50 kilometres in length. He writes: Apropos of this, I may inform you that the coal district discovered by the Geomines Co. (and this formation was discovered by the Geomines alone), on both banks of the Lukuga River, at its exit from Lake Tanganika, is covering an area as large as that of Belgium (which, by the way, has a surface of 29,456 square kilometres). The discovery of the Lukuga coalfields is not, however, as recent as stated. It was made in 1912, if I remember rightly, by Messrs. Minette d'Oulhaye, Xhignesse and Mercenier, engineers of the Geomine (a Liège company), and by Mr. Beutels,



HARD HIT BY THE EPIDEMIC. A RHODESIAN SMALL MINE.

21,858 ounces, valued at £92,035. Gwelo is the largest contributor with £62,191. Bulawayo district is next with a production valued at £57,690, and the Salisbury district comes third with an output valued at £39,686. Of individual producers the Shamva heads the list with an output of £36,490. The Globe and Phoenix is second with £30,104; the Lonely is third with £26,179, and the Rezende Mines are fourth with an output valued at £13,771. The Cam and Motor returns the disappointing total of £1,885. The base metal production was valued at £51,317. Chrome is the biggest contributor to the output, being responsible for a sum of £20,990. Copper contributes £14,942 and coal £10,130. It is interesting to mention that the output of arsenic by the Standard Arsenic Rhodesia Company for the month was 5.03 tons, valued at £284. The arsenic was converted into cattle dip on the property.

* * * *

The reduction plant on the Turkois Mine, Shagari, consisting of 10 stamps, 2 grinding pans, slimes plant, etc., is nearing completion, and should shortly be running. The



A BOILER PLANT ON A SMALL MINE IN MATABELELAND.

the "maitre mineur" of the Minette d'Oulhaye expedition. On account of the enormous importance of this discovery, King Albert made the three Geomine's engineers Knights of the Leopold Order (the highest Belgian decoration), and created Mr. Beutels a Knight of the Order of Leopold II. In 1913 a convention (the Banks' Consortium-Geomine Convention, as it was called) was made between the Geomine, on the first part, and, on the other part, by the groupe Benard and Jarislowsky, the Société-Générale pour favoriser le développement du Commerce et de l'Industrie en France, and the Comptoir National d'Escompte de Paris. As a result of this convention, the Banks' Consortium asked and obtained, amongst others, from the Katanga Special Committee, a block which contained the northern extension of the Geomine Lukuga coalfields. In March-April, '14, the Geomines forwarded, via the Dar-es-Salaam-Kigoma (by Tanganika Lake) Railway, the material required for the working of the mines, and already, in July, 1914, a large part of this material had already arrived. Then the war

interfered, and on August 22, 1914, the Germans, violating the Berlin Conference, bombarded, without any provocation, Albertville, the Belgian Congo port on the west shore of Lake Tanganika, and the centre of the new coalfield. I am reliably informed that the Geomine "Lukuga" coal is suitable as fuel for locomotives, steamships, and all industrial works. Up to now coke-coal has not yet been met with, but it is expected to be found as the workings increase in depth. The borings, according to latest news, had not exceeded 50 to 100 metres. At the present time the working of these Lukuga mines has been stopped, as no arrangements have been made for the sale of the coal produced. As a fact, the locomotives and steamers of the Great Lakes Railway Company are still burning wood, and their transformation to coal-burning was, of course, impossible during the war.

Rand Soda Syndicate.

A rich discovery of soda carbonates, potash and other alkalis is reported from a property in the vicinity of Klerksdorp, according to *The Star* correspondent at that place. It is stated that the Government has been informed of the discovery and that application has been made for discoverers' rights on Government ground. In this connection a Johannesburg syndicate has acquired a large area of the deposits. The syndicate is known as the H.S.K. It is intended to begin development without delay. A full account of the deposit appeared in a recent issue of this journal.

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TWENTY-FIVE YEARS AGO.

(From the "S.A. Mining Journal" of March 10, 1894.)

Unquestionably, from a mining industry point of view, the chief interest of the present week is centred in the annual meeting of the Robinson Company, which, as heretofore, maintains its supremacy as by far the largest profit-earning undertaking upon the Witwatersrand.

* * * *

From the disclosures which have recently been made in connection with the subject of gold thefts, it is abundantly clear that a fresh attempt on the part of the Chamber of Mines to deal with the question is highly desirable, and, this being the case, no fault can be found with the policy about to be adopted. The appointment of a strong committee, with full powers, has been found to lead to certain results in connection with the dynamite question, and there are certainly grounds for hoping that a similarly constituted body will be able to achieve some measure of success in the present instance, if only by accumulation of information and its presentation to Government in such form as to induce action.

* * * *

Consequent upon the resignation of Mr. J. P. Fitzpatrick, whose services have been retained by the Eckstein firm, Mr. R. V. Middleton, well known as one of the most capable company secretaries upon the Rand Mines, has been appointed to the secretaryship of the Rand Mines, Limited. Mr. Middleton has in consequence resigned the secretaryship of the Village Main Reef Company, to which Mr. H. H. Paynter has been appointed.

* * * *

RAND CENTRAL ORE REDUCTION.—These works now present an appearance of great activity, and enlargements are constantly required in view of the increasing business done by the company in each department of its operations. Under the management of Mr. C. H. Butters everything has been laid out in an orderly fashion, thereby preventing the waste which, in some form or another invariably results from lack of system in the general design of arrangements.

* * * *

GINSBERG.—The 10-head mill has now been running at this property for upwards of a week, but it has been decided, we understand, on the advice of Mr. P. Bennet, not to start up the Fruevanners plant for the present. Mr. Bennet, apparently has ideas, and in this instance his ideas have taken the form of Cornish buddles. From the point of view of the company this we regard as an unfortunate error. The value of the ore is exceptionally rich, whilst the percentage of pyrites which it contains is unusually high. Hence it should easily be possible to catch a regular supply of concentrates more than ordinarily valuable both as regards quantity and quality. Now the Cornish buddle, though doubtless a valuable machine for certain purposes, in its application to the treatment of gold ore has its limitations. We had supposed that these limitations were well known, and that, for fine work, its inefficiency as compared with the delicate Fruevanner required no demonstration.

* * * *

MAIN REEF.—This company's battery started work at the commencement of the present month, and, in view of the gratifying reports which have for some months past been received from the mine, a return considerably in excess of any previously obtained is confidently expected by the management.

* * * *

THE SHARE MARKET.—The steady rise in the price of all Witwatersrand shares was somewhat interfered with in the early part of the week by the resignation of Mr. Gladstone and the Ministerial crisis which ensued in consequence, but the lull in the rise was but a temporary nature, and, as soon as it was perceived that Lord Rosebery had succeeded in forming a substantial Ministry, prices once more began to move upwards, and a long string of advances can be recorded as the result of the week's work.

RHODESIAN MINERAL OUTPUT.

Detailed List of Producers and Outputs for January.

WE have received for publication from the office of the Rhodesia Chamber of Mines (Incorporated) the following detailed statement of the mineral output for the month of January, 1919, with comparisons and values:—

MATABELELAND

BULAWAYO DISTRICT.				
	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Abercorn (W. J. Lane) ...	5	43	12.78	177
Do. (sands) ...	—	130	28.71	119
Addie-Iris (H. A. D. Tansley), Dec. ...	2	46	35.50	147
Allee A. (R. J. Howe) ...	2	240	50.17	208
Annasona ...	3	1P	292	248.26
Antelope G.M. (Rhod.) Co. 2BM 2P 1T	—	3280	625.40	2652
Do. (sands) ...	—	3006	668.21	2833
Balmoral (W. Arbery) ...	5	420	98.19	407
Birthday (Germania E. Synd.) ...	2	80	269.66	1118
Bon Accord (Bon Accord Synd.), pan-nings ...	—	—	18.84	78
Camp (Carson Mines, Ltd.) ...	5	1P	510	99.15
Do. (sands) ...	—	270	17.05	71
Cam Stick (Iron Duke Synd. No. 2) ...	3	280	123.29	511
Do. (sands) ...	—	225	34.23	142
Coxswain (Wright & Edensor) ...	3	50	17.69	73
Durban (Durban Synd.) ...	5	426	192.88	800
Do. (sands) ...	—	284	69.34	287
Eagle Hawk (T. Berwitz) ...	5	410	115.26	478
Electrician (E. J. Burke) ...	3	35	14.86	62
Farvie (H. S. Henderson), clean up ...	—	—	69.99	290
Fernando (F. A. Norval) ...	2	229	99.17	411
Fred & Fred IW (Transvaal and Rhodesian Estates) ...	10	2P	1800	999.73
Do. (sands) ...	—	1800	355.17	1472
Germania (A. G. Haddingham) ...	2N	2P	607	460.41
Do. (concentrates) ...	—	F	82.09	337
Horn (Horn Reef Synd.) ...	5	420	112.34	466
Do. (sands) ...	—	310	39.66	164
Howard (Howard Syndicate) ...	5	350	260.02	1078
Jessie (Jessie Tributors) ...	10	2P	1204	373.71
Do. (sands) ...	—	970	67.45	280
Jumpers (J. P. McCay) ...	5	300	197.88	820
Do. (sands) ...	—	196	31.10	129
Lonely Reef G.M. Co. ...	20	3T	4660	2109.44
Do. (slimes) ...	—	4660	4205.83	17435
Marlish (C. A. Abbot) ...	2	26	2.67	11
Matabele Queen's Co., Ltd. ...	10	2P	1000	290.31
Do. (sands) ...	—	1000	93.81	389
Moreton Pinkney (J. Robinson), clean up ...	—	—	4.33	18
Mount Rosa (R. J. Maidwell), Dec. ...	(3)	150	13.38	56
Do. Jan. ...	3	60	37.97	157
New Eclipse (J. R. Stewart) ...	5	1T	1200	524.99
Newtonfontein (A. H. Newton) ...	3	375	269.94	1119
Do. (sands) ...	—	300	54.86	228
Nicholson (G. Black), Dec. clean up ...	—	—	12.36	49
Petrol (E. Warren) ...	5	200	46.87	194
Sabi (Fletcher & Williamson) ...	15	885	82.60	342
Do. (sands) ...	—	590	144.04	5970
Wainui (Moll & Co.), September ...	3	100	42.97	178
By Products ...	F	—	35.45	142

Bulawayo District Total ... 13,890.01 57,691

GWELO DISTRICT.

	No. of stamps.	Tons treated.	Yield. Ozs.	Value. £
Ardpatrick (B. Fran), Dec. ...	3	158	109.46	454
Bonsor B 327 (C. Brunton), Aug., Sept., Oct., 1918 ...	F	—	13.52	54
Chimborazo (Wonderland Trib. Synd.) ...	5	1P	472	135.70
Do. (sands) ...	—	295	29.40	122
Commonage (H. W. Gray) ...	1T	364	40.16	166
Connemara (Connemara Synd.) ...	20	2883	175.55	728
Do. (sands) ...	—	2108	175.31	727
Do. (slimes) ...	—	775	198.16	821
Csardas (Wolfshall Synd.) ...	10	410	155.98	647
Cylyn (T. Malcham) ...	5	60	180.11	747
Danga (Wonderland Trib. Synd.) ...	5	1P	112	32.25
Falcon Mines, Ltd. ...	26N	2T	13514	2867.36
(Copper £13,823). Silver, £550).	—	—	—	12043
Fed Up ...	5	176	94.55	392
Gaika G.M. Co. Ltd. ...	5	10	3312	677.56
Do. (sands) ...	—	3941	553.62	2348
Glen Arroek (Glen Arroek Synd.) ...	5	75	95.91	397
Globe & Phoenix G.M. Co., Ltd. ...	40	12P	5514	5596.83
Do. (sands) ...	—	9110	1248.22	5243
Do. (slimes) ...	—	1806	322.79	1356

	No. of stamps.	Tons treated.	Yield. ozs.	Value £
Gothic (Murray & Kennedy), Nov. 1918	F	—	65.25	261
Leopard, B (A. Malcolm), Dec. 1918	—	—	—	—
(sands) ...	—	350	33.28	138
Loyalist (B. Bertoldi), Dec. 1918 (sands)	—	690	9.90	41
Moss (James & Worthington) ...	5	873	209.68	869
Nevada (F. C. Luxat) ...	5	1H	720	82.17
Do. (sands) ...	—	600	37.18	154
Robin Hood (Gaika G.M. Co.) ...	5	10	51	53.34
Royalist (J. Austen) ...	5	400	116.38	697
Second Trial (J. Rainsford) ...	2	15	3.99	16
Snark 1 (C. Brunton) (sands) ...	—	1080	134.32	557
Surprise (C. Brunton), clean up ...	—	—	14.24	183
Tabekwe (A. N. Tyrell), Dec. (sands) ...	—	1000	48.53	201
Do. January ...	—	600	11.62	173
Trixie (S. Levin), October ...	5	1P	500	79.61
Do. (slags) ...	—	—	1.91	20
Veracity (L. R. Evans) ...	5	600	158.83	658
Do. (pannings) ...	—	—	4.50	19
Wanderer (Selukwe) G.M., Ltd. ...	4GR	9690	874.56	3625
Yankee Doodle (C. Brunton), Aug., Sept., Oct., 1918 ...	F	—	9.82	39
Zabonke (Holmes & Urquhart) ...	5	660	—	—
Do. (sands) ...	—	440	97.79	405
Do. (slimes) ...	—	220	—	—

Gwelo District Total ... 14,842.34 62,191

MASHONALAND.

	No. of stamps.	Tons treated.	Yield. ozs.	Value £
Cam & Motor G.M. Co., Ltd., final clean up ...	RP	—	197.25	836
Do. (slags) ...	F	—	262.69	1051
Cote d'Or (Cote d'Or Syndicate) ...	3	90	119.12	494
Eiffel Blue (Willoughby's Con. Co., Ltd.) ...	10	1203	405.49	1681
Do. (sands) ...	—	750	27.24	113
Do. (Tailings, Ltd.), slags ...	F	—	1.74	7
Glasgow Mines, Ltd. ...	5	431	139.83	580
Do. (sands) ...	—	225	40.29	167
Golden Valley (John Mack & Co.) ...	10	1P	1158	386.44
Do. (sands) ...	—	630	154.16	639
Do. (slimes) ...	—	750	—	—
Glendarra W. Ext. (C. S. Marks) Dec. ...	(2)	60	1.82	8
Do. ...	2	90	2.02	8
Hope (Alexandra Synd. No. 2) ...	5	305	59.51	247
Do. (sands) ...	—	270	14.93	62
Inkerman (I. J. Minaat) ...	5	374	71.96	298
Do. (sands) ...	—	294	18.83	78
Jackie's Luck (Mrs. Sarah Smith), Dec. ...	3	50	21.94	103
Kanyemba (Kanyemba Syndicate) ...	10	440	285.69	1184
Do. (sands) ...	—	260	64.65	268
Lion (J. Baker) ...	2	90	19.39	80
Do. (sands) ...	—	110	2.66	11
Mountain Dew (A. & J. Milne) ...	10	1090	221.11	917
Owl (A. Rolfe) ...	10	1079	203.52	844
Do. (sands) ...	—	874	173.83	721
Owl Ext. (Cribb & Seear) ...	10	835	146.94	609
Do. (sands) ...	—	820	58.19	241
Pen (H. F. Wilson) ...	5	117	30.15	125
Pickstone 1 W (Pickstone G.M., Ltd.)	—	—	—	—
Do. December ...	10	1T	587	184.15
Do. (sands) ...	—	587	—	763
Do. January ...	—	550	107.71	447
Do. (sands) ...	—	550	—	—
Revie (Ambrose & Aitken) ...	5	720	110.33	457
Do. (sands) ...	—	550	45.69	190
Rouge (Dreadnought Syndicate), (clean up) ...	—	—	16.71	69
Shepherds (Begbie & Jackson) ...	10	656	184.80	766
Do. (sands) ...	—	552	165.99	688
Step 1 (W. Miller) ...	2	160	45.69	189
Suspense (A. J. van Breda), Dec. ...	2	75	31.52	131
Do. (January (sands) ...	—	195	32.30	134
Tsessesbe E. Ext. (Ulyett, Cribb & Seear) ...	5	668	202.41	839
Do. (sands) ...	—	600	42.01	174
Tel-el-Kebir (J. G. Volk), Dec. ...	5	150	22.90	95
Do. (sands) ...	—	300	32.41	134
Do. (sands) Jan. ...	—	250	24.11	100
Washington (I. J. Minaar) ...	5	186	35.97	149
Do. (sands) ...	—	146	9.41	39
What Cheer (H. Moser) ...	5	255	73.61	305
Do. (sands) ...	—	475	34.00	141

Hartley District Total ... 4,536.11 18,784

LOMAGUNDI DISTRICT.

	No. of stamps.	Tons treated.	Yield Ozs.	Value. £
Anglian (Schapke & Quarrie) ...	5	251	79.20	328
Angwa (F. L. Standen) ...	5	837	61.38	255
Crescent (Crescent Synd.) ...	F	—	2.02	8
Do. ...	F	—	8.05	32
Eldorado Bkt. G.M. Co., Ltd. ...	20 2C	5317	2083.96	8848
Do. (sands) ...	—	2816	757.90	3215
Do. (slimes) ...	—	2515	—	—
Gloria (H. H. Tallantire) ...	5	135	16.54	69
Maggiemae (J. McMurdon) ...	5	490	123.58	512
Do. (sands) ...	—	390	50.65	210
Mediterraneo (J. Perhat), pannings	—	—	3.22	13
Lomagundi District Total ...			3,186.50	13,490

MAZOE DISTRICT.

Iron 1 (J. M. Laing) ...	5	989	87.84	364
Do. (sands) ...	—	300	26.57	110
Jumbo (N. Irvine) ...	5	408	126.23	523
Do. (sands) ...	—	126	27.05	112
Kimberley (Mash. G.M. Co., Ltd.), (clean up) ...	—	—	4.77	20
Maori Chief (D. McLean) ...	5	170	54.22	225
Mopani (Mopani Synd.), clean up	—	—	4.72	20
Promoter (F. C. Croxford) ...	C	2022	117.21	486
Do. (sands) ...	—	1560	81.26	337
Trafalgar (G. G. N. Southey) ...	2	76	33.30	138
Rosa (R. Aserman), Dec. ...	(C)	1200	66.61	276
Do. January ...	C	1250	100.38	416
Mazoe District Total ...			730.16	3,027

SALISBURY DISTRICT.

Beatrice (New Beatrice G.M. Co., Ltd.), slimes ...	—	630	37.58	156
Euchred (W. C. Harrison) ...	8	730	190.87	791
Left Bower (B. G. Byerley) ...	5	320	129.06	535
New Full Back (W. B. Maris) ...	2	36	8.40	35
Planet (Planet Mine Tribute) (slimes) ...	—	2000	156.34	648
Shamva Mines, Ltd. ...	56N 10T	51150	3200.45	13570
Do. (sands) ...	—	26137	5394.60	22921
Do. (slimes) ...	—	25365	—	—
Southern Cross (Arab Syn.), balance Nov. ...	—	—	18.68	77
Do. December ...	—	49	15.37	63
Do. (sands) December ...	—	200	26.23	109
Trio (Trio Synd.) ...	5	330	188.32	781
Salisbury District Total ...			9,365.90	39,686

UMTALI DISTRICT.

Grand (W. W. Wright) ...	2	60	16.34	68
Liverpool (R. G. Snodgrass) ...	5	540	62.45	259
Do. (sands) ...	—	220	63.10	261
Rezende DB 1 (R.P. Synd.) ...	10	2208	156.64	649
Rezende Mines, Ltd. ...	40	5200	1914.00	8121
Do. (sands) ...	—	3138	389.26	1652
Do. (slimes) ...	—	1544	321.76	1365
Do. (concentrates) ...	—	132	467.53	1984
Umtali District Total ...			3,391.08	14,359

VICTORIA DISTRICT.

Cambrian (J. & D. Laing) ...	10	850	174.03	721
Do. (sands) ...	—	600	90.17	374
Dakota (Dakota Syndicate) ...	2	190	29.08	121
Empress (S.A. Pros. & Con. Synd.) ...	8	1240	219.82	911
Do. (sands) ...	—	800	135.44	561
Victoria District Total ...			648.54	£2,688

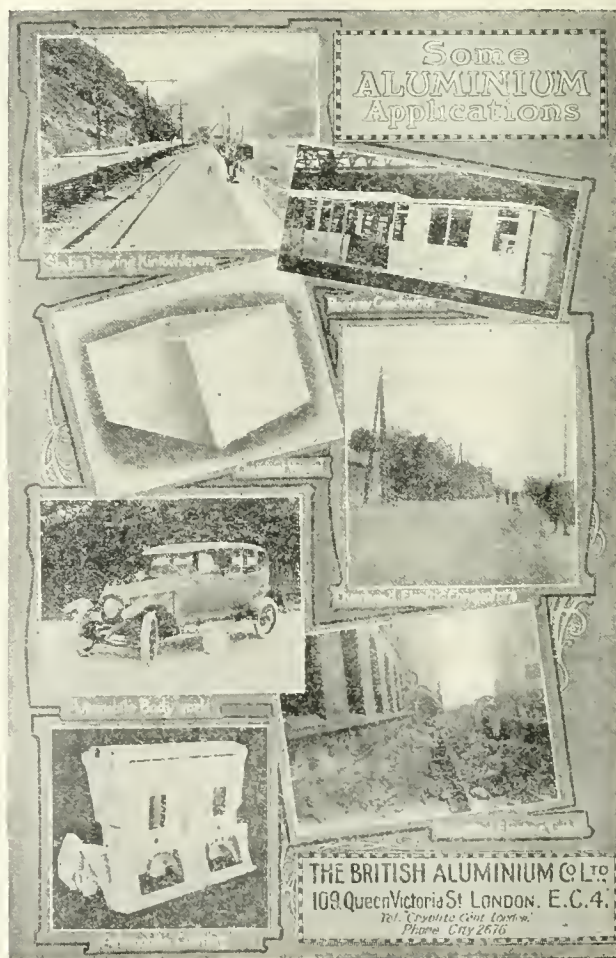
(P) Grinding Pan, (BM) Ball Mill, (T) Tube Mill, (H) Huntington Mill, (G.R.) Gates Rolls, (B) Ball Mill, (Pu) Pneumatic Stamp, (N) Nissen Stamp, (C) Chilian Mill, (RP) Roasting Plant, (F) Treated at Falcon Mine, (WM) Waterfall Mill, (LM) Lane Mill.

ASBESTOS.

Bulawayo District.	Tons.	Value.
Birthday A Willoughby's Consolidated Co., Ltd. ...	51.55	£ s. d. 824 16 0
Victoria District.		
Gath's (Rhod. & General Asbestos Corporation, Ltd.) ...	106.92	1,710 16 0
King Asbestos (Rhod.). Ltd. ...	25.00	687 10 0
Do. do. ...	33.40	668 0 0
Do. do. ...	73.60	662 8 0
	290.47	£4,553 10 0

SUMMARY OF PRODUCTION.

	£
GOLD ...	50,590.64 oz. 211,917
SILVER ...	14,759.34 oz. 3,554
COAL raised ...	42,312 tons (sales) 10,085
Do. used for Coke and Bricks (estimated value) ...	4,950
COPPER (Blister) ...	298.84 tons 14,943
CHROME IRON ...	4,725.10 „ 20,990
ASBESTOS (Fibre) ...	290.47 „ 4,554
WOLFRAMITE ...	46 „ 70
SCHTELITE ...	1.00 „ 105
IRONSTONE ...	1,344.00 „ 168
ARSENIC ...	5.03 „ 346
DIAMONDS ...	8.00 carats 15
	£271,697



ENGINEERING SECTION.

SCIENTIFIC RESEARCH; SCHOLARSHIPS AND GRANTS FOR SOUTH AFRICANS.

We are now able to give details of the Government scheme for encouraging scientific research in the Union. The Government, having been advised that, owing largely to understaffing, lack of necessary equipment, and the absence of provision for research scholarships, the higher educational institutions of the Union are being insufficiently utilised for the purposes of scientific research, has, with a view to obtaining advice regarding the practical measures necessary to remedy these conditions, established a body under the title of "The Research Grant Board," consisting of the following gentlemen: Prof. R. B. Young (chairman), Dr. J. C. Beattie, Prof. J. W. Bews, Mr. L. Colquhoun, Sir Thomas Cullinan, Sir Robert Kotze, Dr. J. McCrae, Mr. Bernard Price, Prof. B. de St. J. v. d. Riet, Mr. F. B. Smith, Sir Arnold Theiler. On the advice of the Board, it has been decided to establish immediately a system of research scholarships and of grants towards the expenses of scientific research. Particulars regarding these will be found in annexures "A" and "B." With regard to understaffing, it is felt that in cases where members of staff have shown a marked aptitude for scientific research, arrangements should be made to afford them a reasonable amount of time for such work. While the Government is prepared to promote scientific research by the means just indicated, it is hoped that the governing bodies of the Universities and University Colleges will, on their part, do all that lies within their power to quicken the spirit of research in these institutions. The scholarships to be instituted are to be known as "Government Research Scholarships," and will vary from £80 to £250 per annum for one or two years, but may be renewed in the event of favourable reports being received on the quality of the work accomplished. They will be open to all persons resident within the Union of South Africa, and will be granted for the purpose of scientific research within the Union of South Africa. Under special circumstances the Research Grant Board may permit a scholar to continue his research overseas. It is stipulated that every scholar shall devote his time to the prosecution of the research for the purpose of which the scholarship was granted, and shall conduct his research under the control and supervision of a person approved by the Research Grant Board. In any publication of the results of the research of a scholar the author must designate himself or herself as "Government Research Scholar." The scholar shall furnish to the Research Grant Board such number of copies of the publication as it may require. Application for scholarships must be made through and with the approval of the governing body of one of the higher educational institutions of the Union, in consultation with the Senate, or of the governing body of a Research Institute or a Museum. In the case of the University of South Africa, applications shall be made through the governing bodies of the constituent Colleges. Applications for scholarships tenable during 1919 must be received not later than March 31, and for the following year not later than October 1, 1919, and must, as well as all other communications regarding scholarships, be addressed to the Secretary of the Research Grant Board, Room 155, New Law Courts, Johannesburg. Grants in aid of research, to be known as "Government Research Grants," will be made only for the actual expenses of investigation, and are not intended to support the grantee while carrying out his research. In certain cases grants may be made in aid of the publication of the results of research. Applications must be made direct to the Research Grant Board. In any publication of the results of the research, due acknowledgment must be made of the

assistance received. The grantee shall furnish to the Research Grant Board such number of copies of the publications as it may require. Applications for immediate grants must be received not later than March 31, and for the following year not later than October 1, 1919, and must, as well as all other communications regarding grants, be addressed to the Secretary of the Research Grant Board, Room 155, New Law Courts, Johannesburg.

Port Elizabeth.

We have received a copy of "The Trade and Commerce of Port Elizabeth," published by the Electricity and Industries Department of the City Council. Mr. B. Sankey, the City Electrical Engineer, is one of the editors of the publication, which sets forth a large amount of information and includes many excellent pictures, which would interest those who want to know anything concerning the general facilities offered by Port Elizabeth from the industrial, residential, electric power, and other points of view.

Cape Central Railway.

The *Worcester Standard* states: We have obtained an authoritative statement from the Robertson headquarters of the N.C.C.R. Company. From this it would appear that the negotiations have been conducted by Mr. Burton himself, and he took the opportunity, when in London, to approach the board of directors of the New Cape Central Railway. Whatever progress was made by the Minister in the desired direction, it was not conclusive—the agreement, if any, will be arrived at by General Botha and Sir Wm. Hoy whilst they are in the Metropolis. Here, then, we get an indication of the main purpose of the visit to England of the General Manager of Railways in company with the Premier, and its importance is accentuated to the residents along the south-western route of the private railway, who are sending their delegation to Capetown as soon as Parliament meets.

Rhodesian Railway Water Supply.

Foresight and enterprise on the part of the Beira and Mashonaland and Rhodesia Railways have created on the Khami River, within a dozen miles of Bulawayo, what is nothing less than a new lake of considerable size and some beauty. On the invitation of Mr. E. R. Ross, a party of visitors, including the Mayor and several Town Councillors, visited the now completed dam which is to provide the Railway Department with its water supply. On the way a halt was made at the Railway Department's reservoir, on the top of the hill, near Belleville, when the party inspected the great tank, which has a capacity of 200,000 gallons and contained 130,000 at the moment. The water is pumped thence from the Khami, and descends by gravitation from this considerable height to the railway offices, workshops and camp at Raylton. The next halt was at the pumping station at Khami, where the newly completed plant includes two large British-made boilers, each of 30 horse-power, and two compound condensing American pumps, capable of pumping 13,000 gallons hourly. Close to the buildings accommodating this machinery a beginning is being made with the construction of filtering beds, from which the water will gravitate into a large clear water tank.

Higher Speeds for Engines.

The amazing pace of technical progress in petrol engines for airplanes and automobiles has its benefits in other fields. It is now seen that stationary engines driven by internal combustion can be made lighter and cheaper by adopting a higher piston speed. A radical departure from standard design is required. Again it is believed that we are on the eve of far-reaching changes of practice which will facilitate the use of hitherto untried fuels and the economical combustion of weak mixtures when engines are running on light load. The whole effect of these discoveries should be a great impetus to the employment of stationary oil engines.

Wireless for All Commercial Aeroplanes.

One essential to the development of a long-distance aeroplane service for passengers, mails, and parcels delivery, is the use of wireless telegraphy. All the aeroplanes used in this service will, like every large ship, carry wireless and an efficient operator, thus making it possible to send telegrams from any part of the world, on sea or land to the aeroplane during its voyage. The aeroplane will also receive regular messages regarding the weather conditions in the regions towards which it is heading and will therefore be able to adjust its course to avoid fog and other dangers. It is curious that one of the first things to be transported over a long distance by aeroplane is a British wireless installation. Arrangements were recently made for the erection of Marconi wireless stations in remote parts of China—one on the frontiers of Cashmere and the other on the Chinese side of Siberia. As there is neither road or rail available in these regions, the Marconi Company arranged for the transport of the plant by a large Handley Page aeroplane.

Improvements in Steel Making.

Amongst war-time research work, the benefit of which will be permanent, better control of the heat treatment of steel promises valuable results. It is now widely recognised that comparatively few degrees variation in the temperature makes all the difference in the properties of the finished material. The difficulties are particularly great where large masses of steel are concerned, because it is difficult to secure the same temperature at the surface and in the mass of the metal. Other difficulties are introduced by the different scaling tendencies and different emissivities of various steels. Recent improvements in furnace construction facilitate the attainment of uniform temperatures, and the means and methods of pyrometry have been developed to such an extent that the most delicate heat treatment can be given with almost mathematical certainty and on the basis of a commercial repetition process. It was suggested recently by Dr. Carpenter, at Sheffield, that working temperatures would be laid down in specifications for steel products in the near future. A start has already been made and the state of practice is such that this policy is sure to be extended.

Big Potato Crops With Electroculture.

Striking experiments in electroculture were carried out by the South Wales Electrical Power Distribution Company during 1917 and 1918 on a two acre plot of ground near Pontypridd. As regards ploughing and manuring, the whole plot was treated alike, but electroculture was applied to only a portion of the ground, the remainder serving as a "control" for the purposes of comparison. Potatoes were planted under precisely similar conditions over the whole area, and during 1917 the electrified portion yielded a crop heavier by 17.2 per cent. than that of the control portion. In 1918 the increase out of electroculture was 12.6 per cent., the reduction being explained on several grounds, such as that a smaller area of electric wires was used and that part of the controlled plot had had the benefit of electrification in the previous year. Experiments were also made with oats in an adjoining field, and although they were not carried out very thoroughly they point to an increase of 25 per cent. in grain and 17 per cent. in straw. On the potato patch the wires were first arranged as a 6 foot rectangular network

supported on insulators 6 ft. 6 ins. from the ground; in August, 1917, the height was reduced to 5 feet. During the 1918 experiment the wires were spaced 9 ft. apart, with no cross wires and were kept about two feet above the haulms. The network was fed through a transformer and rectified with current at between 30,000 volts and 39,000 volts according to the degrees of weather; the amount of current taken varied from 2.5 milliamperes in dry and from 4 to 7 in wet weather during 1917, and from 0.35 to 0.8 during 1918. The apparatus never failed, even in the wettest of Welsh weather. On dark nights the wires could be seen glowing, and even the tips of the grass in the rectifier were touched with light. Insects seemed to avoid the wires, but occasionally they settled upon the networks, where they glowed and were electrocuted. Although the voltage is so high the current is so low that there is no danger to anything but insect life. Horses are extremely susceptible to electric shock, but one which broke into the network retired undamaged, although carrying a good deal of wire with him. These experiments confirm the promising claims made for this application of electricity to agriculture which is being carefully studied by a special sub-committee of the British Board of Agriculture.

The Tube Mill and Tin Ores.

In course of an instructive paper on "Tube Milling as applied to Metalliferous Ores," recently read before the Cornish Institute of Engineers, the author, Mr. J. Warne Chenhall, A.I.M.M., gave the following interesting historical summary:—The introduction of the tube mill to the gold mining industry of South Africa in 1904 may be said to have brought about a revolution in crushing methods as then obtaining. Hitherto good recoveries of gold by amalgamation and cyaniding were dependent upon fine crushing by the stamps. Losses of values in the tailings, however, were admittedly appreciable. With the advent of the tube mill the function and scope of the stamp changed to that of a crushing device pure and simple, with capacity hampered only by tube mill limitations. Finer crushing by the tube mill was followed by diminished losses of values in the tailings. Relieved of the duty of fine crushing, coarse crushing by stamps became the vogue with limiting factor the coarseness permissible for good amalgamation. Coarse crushing led to the development of heavy stamps and larger mesh screens assisted to increase output. The author makes bold to assert that, had the possibilities of the tube mill as a crushing device for the finer grinding of tin ores to release values been fully realised at home, the shareholders of many of the mines of the Camborne and Redruth district instead of experiencing disconcerting lean times might have sat down to count-house beanfeasts and congratulated themselves that all was well with the Bal. The employment of the tube mill for fine grinding as a preliminary to the retreatment of the mines tailings carried down to the sea would have effected, say, within the last decade and a half a saving of thousands of tons of metallic tin, notwithstanding the recoveries made by the tin streamers. The fact that losses have been appreciable is admitted, but that a percentage loss figure has been common to all undertakings of, say, 30 per cent., although reasonably inferred, would not be accepted generally. It may well be asked: What is the economic limit of employment of tube mills for the treatment of tin ore tailings? Failing a chemical process for tin, analogous to cyaniding for gold, with possible extraction of over 90 per cent., the character of the ore would determine the matter to a very large extent. Power considerations would also weigh heavily in the scale. With exceptional conditions obtaining in respect to the latter, and given the tailings not complex in character, the economic limit would appear to be somewhere between 6 and 8 lbs. tin to the ton. The author has knowledge of tailings 7 lbs. tin to the ton having been milled and concentrated over tables with resultant tails 4 lbs. tin to the ton. It has been found in the treatment of tailings at Wheal Agar stamps that, with each succeeding lb. tin reduced value of the tailings, dressing difficulties increase, due to impurities or deleterious matter being more closely associated with the cassiterite.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Labour and Trade Position—Congestion of Goods at Cape Ports—Facilities in Respect of Prospecting Operations—Timber and Iron Prospects—Oils, etc., Higher Levels Probable—Scarcity of Electrical Tubing—Wiring Abundant.

The labour position in Johannesburg and now more particularly the latest developments in Pretoria reflect the trade position, as no matter to whom one speaks, the same answer is received, that the strikes in existence and contemplated have created such an unfavourable impression that business, except for absolute requirements, is practically at a standstill. It is tantalising that just before the builders' strike we were getting on nicely as regards actual trading in timber, bricks, builders' hardware, etc., as a number of business premises and residences were in progress, and any quantity of plans ready for tendering, more especially the Government schools. By other coincidences the mines have practically stopped purchasing other than sorting-up lines, as they are using from reserve stocks. It is noteworthy that, as the Minister of Mines, in reply to a question in the House, drew attention to last year's legislation, which provides for certain facilities being granted to prospectors in connection with prospecting operations in addition to those provided for under the Precious and Base Metals Act, 1918, of the Transvaal. Moreover, provision has already been made in the estimates for a substantial sum for the improvement of communications in the more remote mining districts. The question of the poorer mines has had very careful consideration, but it was not considered necessary to call for further action on the part of the Government, it being hoped that a reduction in the costs of materials and other economies may help the position considerably in the near future. Hence a quietus to any hopes we might reasonably have had of some assistance. However, the whole question will be dealt with at the annual meeting of the Chamber of Mines on Monday, March 24th. In the meantime a halt has been called as to anything like extensive buying until it is seen what will become of the poorer mines and their stores.

TREND OF BUSINESS.

As previously stated, the congestion of goods at the coast ports has become serious, more particularly at Capetown, which is the first port of call for the American ships. Unfortunately the American manufacturers have been and are pushing ahead with old orders, for which they had bankers' guarantees, therefore goods and mining materials are arriving in quantities from week to week on a very much overloaded market. Take, for example, one essential line of steel plates, which are on offer at £47½ to arrive in six weeks, being about half the top price touched during the war, but the orders were placed whilst the top prices were raging here, through an acute local shortage. The price named is not the lowest from merchant to merchant, especially when a line has to be realised for spot cash, when sometimes a nasty jar takes place in recognised values. It must be borne in mind that in addition to the ordinary importing merchants getting goods, there are quantities floating, having been purchased by manufacturing agents on their own account as a pure matter of speculation, on the strength of what their clients were doing. A responsible merchant was specially interviewed on this subject, when it was ascertained that it was not unusual to hear that So-and-so had lost a considerable amount on such-and-such transaction. The thread of this statement was followed up,

and a leading query put as to the general financial stability of speculators and others. The guarded reply came, that there was no reasonable fear in that direction, but undoubtedly since the armistice a great deal of money had been lost, but those who are hit made a good lot during the war period. However, the opinion was expressed that in not a few cases many of the gains were now being liquidated against losses and these are not all over yet. Values are undoubtedly sagging throughout the list on account of surplus stocks and the do-nothing stage of business, as would-be buyers are nervous and will not stock anything until they get a fair idea as to the belated orders yet to come from overseas.

TIMBER AND BUILDING MATERIALS.

There is another sag away in deals and roofing iron. Deals are 1s. 7d.—1s. 8d.; floorings, 10d.; ceilings, 6½d.; galvanised roofing iron, 24 gauge, 1s. 6d.—1s. 7d., according to length. There is very little news from the Baltic, as holders who are well-to-do are evidently marking time to

TAKE NO CHANCES

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Fit a belt you know will do
the work, and that must be a
"TULLIS BELT."

"Chonata" BRAND Balata.
(Driving and Conveying)

"St. Ann's" BRAND Leather.

"Swan" BRAND Waterproof.
(Single, Double and Treble)

"Homogene" BRAND Laminated.

"Viking" BRAND Launder Lining.

ascertain what kind of demand will spring up after peace. There is an increase of £2 a standard on deals f.o.b., which represents about a halfpenny per foot. Against this there was a decent drop in freight from March 1st, and according to cable information there appears to be quite as many ships as wanted for timber shipments. South African timber, f.o.r. Johannesburg: Cape pine, 3 in. wide by 1 to 3, 5d.; 4 in. wide, 4d. to 7½d.; 6 in., 7d. to 11d.; 9 in. wide, 6d. to 1s. 2d. White wood for cabinet and wagon makers, 3 in. wide by 1½ in., 2 in. and 3 in., 4d. to 7d.; 3 in. thick by 1 in., 6 in., 9 in. and 12 in., 9½d. to 2s. 3d., all at per running foot. Mining timber, 32s. to 34s. per ton.

OILS, WHITE LEAD AND COLOURS.

There is very little doing in town on account of the strike. Now and again there are very fair orders from the country for paints and such like. White lead is plentiful, but prices remain firm as values have advanced in England three times since the armistice. It is 1s. 3d. per lb., and 11d. and 1s. in 100 lb. kegs, according to the brand. Genuine red lead is 1s. 6d. and 1s. 3d. lb. respectively. Turps advanced a further 3s. per case in New York on March 1st. Quotations here, 70s. per case 2-4's, and 75s. 10-1's. Turpentine substitute, 15s. per case 10-1's. Linseed oil easier, owing to such plentiful stocks being available. The English market opened at a very high figure and will be dearer when it arrives than the present ruling values. Johannesburg prices, 13s. 6d. I.G.; 12s. 6d. 7 lb. tin; 2s. small bottle. Merchant to merchant, 12s. 6d. per gall., being a matter of negotiation. Olive oil, 25s. per gall., with small stocks. Cotton seed (best salad), 130s. per case; market very firm indeed. S.A. nut oil, 70s. to 75s. per case. Glycerine, 2s. 9d. to 3s. lb. Transvaal washing soda, £13½ per ton: was up to £17½ before armistice. English caustic soda, 45s. per doz. in 5 lb. tins; 18s., 2 lbs.; and 9s. 9d. 1 lb. tins; slightly cheaper. Lubricating oils same price, 40s. to 50s. per case. Best putty, 10½d. lb. and 8d. in 100 lb. lots. Varnishes, from 15s. gal. upwards. Plate and window glass are plentiful at same prices as last. American glass, 100 ft. cases, 16 oz., in 35 sizes:—7 x 9, 228 sheets per case, 105s. and 6d. per sheet; 14 x 18, 57 sheets, 110s. and 2s. 3d. per sheet; 24 x 36, 16 sheets, 117s. 6d. and 7s. 6d. per sheet, and so on.

ELECTRICAL GOODS.

The outstanding feature in the electrical world this week is the entire absence of tubing throughout South Africa, but there are large shipments on the water, as one firm has 100,000 ft. and another 160,000 ft. on the way. The price was 15s., but now 50s. per 100 ft., and people are glad to get it at that. Arrivals of new stocks may be delayed any time up to four or five weeks, therefore values are expected to go higher, but obviously when the new stocks arrive there will be a drop in prices, similar to what has happened with wiring that has been arriving freely of late. Wiring is an important item and its abundance and comparative cheapness are very welcome. During the past

week it is computed that five or six hundred miles of wiring has been received, but owing to the strike the demand has fallen off considerably. Country orders remain about the same.

STEEL AND IRON.

The price of imported bar iron and mild steel remains the same, also the locally made. Business is fair from the country districts and there is a little demand from the foundries in Johannesburg. A member of the Commercial Exchange states that in tendering he finds the keen competition with so little demand from the mines has reduced the price of iron lower than it is warranted on overseas values. The price of drill is 10d. lb. solid; for hollow, 1s. 3d.; mild steel, 6½d., but fluctuating; tool steel, 1s. to 1s. 6d. Spring steel is very scarce indeed. On the Exchange the enquiries were fairly numerous at the opening of the month, but for very small quantities, and only for everyday odds and ends for maintenance work, as it seems for the present that nobody wants construction materials.

America's Gold Stocks.

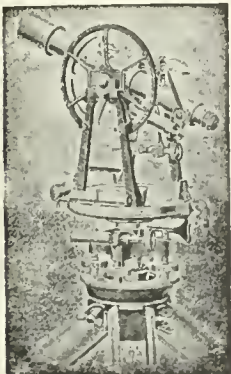
In the United States the end of the war has brought with it some new problems. One of these results from the accumulation of unduly large stocks of gold. In the bulletin of the National City Bank of New York it is pointed out that with the contraction of business which may now be expected there must be a gold surplus which it will be difficult to export owing to the favourable balance of trade. Nothing but a condition of industrial activity and a level of prices approximating that experienced during the war could keep this stock of gold employed, and at this level of prices export trade would be checked. The suggested solution is that the gold should be parted with in exchange for European securities.

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Company Meetings.

PREMIER (TRANSVAAL) DIAMOND CO., LTD.

The annual general meeting of the Premier (Transvaal) Diamond Co., Ltd., was held Feb. 28. Sir Thomas Cullinan, chairman of the Company, presided over a representative attendance and in moving the adoption of the report of the directors and accounts said that they met to discuss the accounts for the year 31st October, 1918, under happier and more cheerful conditions than they had been able to do for some years past, and although it was usual that only business should be discussed at company meetings, still he thought it was not out of place to express their thanks that the terrible war, which had embroiled the world for over four years, had come to an end, also their reverence to the memory of those who had made the great sacrifice and their unbounded pride in the gallant men on land, on sea and in the air, who had vindicated justice and right and removed the terrible menace to civilisation and freedom. It was a great relief to all to know that more stable and prosperous conditions would obtain in the not far distant future, but, though the war had been brought to a successful termination, the world was at the moment faced with difficulties and unrest, with which their statesmen and the statesmen of their Allies were grappling in a spirit that promised a solution of the great problems confronting them. He thought shareholders could again congratulate themselves on the satisfactory position disclosed by the accounts. Their divisible profit for the year was £667,075; true, that was lower than last year, when the figure was £757,045, but the difference was more apparent than real. At the end of the year 31st October, 1916, they had the large amount of £160,330, represented by diamonds on hand; that was shown as profit in suspense and was realised during 1917; the year 1917 thus benefited at the expense of 1916 to the extent of £160,330 less whatever diamonds were in stock at the end of 1917, which only reached the small value of £10,355. In addition to that they booked in 1917 a portion of the further profit realised for their diamonds under the selling arrangement, the portion of profit accrued before the close of their financial year. They would see then that the year just closed had had practically no assistance in the shape of diamond stock from the previous year, and further the directors decided, that although a considerable additional profit under their selling arrangement was due, it would, under the circumstances, be better to bring that into account during the year in which the cash was received.

A far better way to compare one year's profit with another was to take the balance of their expenditure and revenue account No. 1, before dealing with the stock on hand in each case; looking at it that way they would find that after deducting expenses from the realisations in their diamond account for 1917 they got the balance of £650,994. Treating the past year in the same way they got £665,272, so that really 1918 was a better year, as far as actual mining was concerned, than 1917 by some £14,327.

Sir Thomas proceeded to deal with the working cost per load, which is only a very small fraction of a penny higher than last year—2s. 2.89d. as against 2s. 2.68d.—but when they considered that in spite of the increase in price of every commodity, including explosives and coal, both heavy items, their working costs were still below the figures before the war, they would agreed that they had

every reason to be satisfied with the result, and with the management that had brought about that result. The yield per load was the lowest yet recorded by the Company, which, as had often been pointed out, was not the final or determining test of the value of a mine. The proper and sure test was the value per load.

When addressing them last year he explained the shareholders' participation in the launching of the South African Marine, Fire and General Insurance Co., Ltd., and he was glad to be able to tell them that no claim had been made upon the funds of the Insurance Company in respect of diamonds exported under policies issued by it. The Company had served a very useful purpose, and were it not for the very great risks that it took, which other insurance companies refused to take, the mining operations of the great diamond producers would have had to be restricted to very small dimensions, as the producers would not care to have faced the risk of shipping diamonds uninsured.

They all knew the sad havoc caused by the epidemic which, during October and onwards, swept with devastating effect over the whole world. They had much to be thankful for, in that the phase of the disease on the mine was not in the virulent form experienced in other centres, yet it was sufficiently serious to spoil what would otherwise have been a new record in their death-rate among natives. Occurring late in the Company's year, the epidemic had interfered but little with the results as reflected in the accounts. Since the close of the year, however, their operations had been seriously hampered through shortage of labour. Even to day they were a long way short of their complement to work their No. 3 gear to its full capacity. The labour position was, he was glad to say, improving slowly, but it was difficult to tell when conditions would again be normal.

Since their last annual meeting three more of the Company's employees had made the great sacrifice. Messrs. E. C. Gurney, T. H. Allen and T. Moore were killed on active service. During the war death had also claimed some of their most trusted and valued officials, in the persons of Mr. Howes, Mine Manager, Mr. Ferreira, the Pulsator Manager, and Mr. Owtram, the Electrical Engineer. To the relatives and dependents of these officials and men his colleagues on the Board joins with him in extending their sincere sympathy in their bereavement. Before he sat down he wished to extend the Board's thanks to the General Manager and staff at the mine for their untiring and devoted energy to the Company's work. To the Secretary and Head Office staff he also wished to convey their appreciation of their services. The thanks of the Board were also due to London Office and staff for the despatch of business there.

In seconding the motion, Mr. P. Ross Frames said: Mr. Chairman and gentlemen,—The last occasion on which I had the pleasure of addressing you was at the annual meeting held in February, 1916, when it fell to my lot to second the adoption of the directors' report and the accounts for the year, and I was impelled, reluctantly, to criticise the Government's action in unjustly imposing upon this company burdens in breach of the contract existing between the State and the Premier Company. To-day I find myself in the same melan-

choly position and it may be necessary to repeat much of what I then said, in order that you may thoroughly appreciate the injustice that was done in 1914 in making this company liable to pay income tax, and again in 1916 when the so-called export duty was imposed in respect of rough diamonds, the product of mines as distinguished from diamonds recovered from the alluvial fields and the further injustice that is now threatened this company by the proposal, contained in the Minister of Finance's Budget speech delivered last week, to double the export tax by making it 10 per cent. on the gross value instead of 5 per cent.

The Premier Mine was discovered in 1902, when this company was formed to work it under the provisions of Law 22 of 1898. Originally no reservation of minerals to the State was made in the title of the farm on which the mine is situated, but subsequently the Volksraad of the late South African Republic passed a law dealing with both gold and diamonds. It was found, however, impracticable, or at least inexpedient, to have the same law for diamonds as applied to gold, and consequently in 1898 a new law was passed by the Volksraad, under which the separate and divided interest or shares of the State and owner were clearly defined. Subsequently in 1903 and after the discovery of your mine, and whilst it was being actually worked by this company, the law of 1898 was repealed by the Legislative Council of the Transvaal Colony, and other provisions were made entirely wiping away the rights enjoyed by the owner under the former law, and saddling the company with the Government as a partner, and this was done notwithstanding the vehement, emphatic and almost fearful protests of the company.

This enactment, Ordinance No. 66 of 1903, still governs, or is supposed to govern, the relationship between the State and the Premier Company, though I shall endeavour to show, and I shall succeed, I think, in showing, that the present Government regard the solemn contract forced upon the owners of the Premier Mine as a mere "scrap of paper," to be torn up whenever the financial necessities of the country render such a course desirable from the Government's point of view. The late Sir Richard Solomon, who was in charge of the Bill, which ultimately became Ordinance No. 66 of 1903, and whose sincerity no one who knew him would think of impeaching, in speaking on the Government's share in the diamond mines, said: "He had always held the opinion, and he had expressed it on every occasion on which he had addressed the Council or the Committee on the question, that he considered the existing law No. 22 of 1898 was bad from beginning to end; that in his view the proportion of the mine, under that law, given to the owner was wholly inadequate, considering his rights under the common law of the country, and under the law under which he enjoyed his rights prior to the passing of the Law 22 of 1898. Therefore he was not going to confine himself merely to finding out how much undivided share was equivalent to a selected one-eighth under the existing law. He had a perfect right to consider the existing law, and to consider whether the opinion which he

had formed with regard to the existing law, was supported by evidence or not.

"The opinion which he had always held with regard to the existing law in so far as the existing law dealt with the owner's share of the mine had not been shaken in the slightest degree by the evidence that came before the Select Committee. If he were satisfied that the one-eighth selected share in a mine was a fair proportion to give to the owner of the farm on which the mine was discovered, well, he admitted the only question he would have to consider would be how much he would give him under the Ordinance now before the Council, which divided the mine between the Crown and the owner in undivided shares. He thought he would show, when he came to deal with the evidence before the Select Committee, how difficult a question that was to answer, and how, after all, they would have to decide that important question on broad grounds and principle."

And later, in pointing out that the law that was then being passed was intended to apply to mines poorer than the Premier, he stated that he knew of mines yielding from 15 to 20 carats per 100 loads, which were being worked in the Cape Colony and Orange River Colony and ought to be worked in the Transvaal with profit unless they introduced legislation which would throttle these mines. In parenthesis, I may here mention that at that time your mine was yielding 129 carats per 100 loads, equal to a value of £177 15s. 10d., as against 17.7 carats, equal to a value of £25 1s. at the present time.

Sir Richard Solomon, continuing the debate, went on to say: "The Government did not want to throttle the diamond industry—they wanted to give encouragement—at all events to those mines which, under proper conditions, would be payable, and which were payable now in the Cape Colony and the Orange River Colony. They therefore preferred to accept the proposals made by the minority report to the proposals made in the majority report. It was a matter which required very anxious consideration indeed, and he felt sure all of them in dealing with the question only desired to do what was fair between the Crown and the owner, remembering at the same time that the Crown ran no risks whatever. It was the owner who used his brains and risked his money, and therefore the owner was surely entitled to a fair consideration."

Oh! what a change has taken place! Sir Percy Fitzpatrick, a member of the Legislative Council at that time, proposed that the Government should take 75 per cent., and the owner 25 per cent. of the net produce of any diamond mine in the Transvaal. This was defeated, and the law was passed in the form in which it stands to-day, namely, that the Government should receive 60 per cent. and the owner 40 per cent. It is only fair to the opposition to say that, though the law applies to any diamond mine then already or thereafter discovered in the Transvaal, the whole of their arguments were based upon the then yield and value of the load (£1 15s. 6d.) produced from the Premier Mine.

I take it nobody will deny that the Crown and the Premier Company became partners—unwilling partners so far as this company was concerned—in the Premier Mine, and that the Precious Stones Ordinance of 1903

constitutes the Deed of Partnership, which cannot be altered by the one party without the consent of the other, and ought not to be treated as a "scrap of paper," which the Government can tear up whenever it suits its convenience or whenever it is in financial straits. In 1914 Parliament made this company liable to pay income tax on a sliding scale, notwithstanding the strenuous efforts of the Government to exempt companies in whose profits the Crown had an interest. The Government was defeated, but continued in office. In 1915 and 1916 this law was re-enacted with certain amendments, and in 1917 the Income Tax Act and Mining Taxation Act, 1910, were repealed by a consolidating act which rendered this company liable to pay income tax at the rate of 5 per cent. and dividend tax at the rate of 7½ per cent. In 1916, an Act was passed imposing an export duty ranging from ½ per cent. to 5 per cent. on the value of rough and uncut diamonds found in, and exported from the Union. Alluvial diamonds found by individuals as distinguished from corporate bodies were free from export duty. In 1917 the Export Duty Act of the previous year was repealed and a flat rate of 5 per cent. on the value of rough and uncut diamonds was imposed and the same exemption of alluvial diamonds was re-enacted.

From these facts it will be seen that the Premier Company has, under existing laws, to pay the Government 60 per cent. of its mining profits, an export duty of 5 per cent. on the gross value of its product, an income tax of 5 per cent. on its profits and a dividend tax of 7½ per cent., or in a terser form 60 per cent. plus 5 per cent. (equal to 8.33 per cent. on profits) plus 5 per cent. plus 7½ per cent., and now it is proposed to double the export duty on the gross value of rough and uncut diamonds, which I shall later show you is equivalent, on the present ratio of profits, to an additional profit tax of 16.66 per cent. Fortunately these percentages are not added together and deducted from the net profits, but each tax is assessed on the balance of profits after deducting the previous tax—for this we are devoutly thankful to a benevolent and paternal Government. These taxes and duty increase the share of the Crown, one of the partners, at the expense of the Premier Company, the other partner, and thus has the Government declared to the world that it regards the Precious Stones Ordinance, 1903, the solemn deed of partnership, a mere "scrap of paper" to be torn up whenever it requires money. Some time ago it was stated in a newspaper published in Capetown that "the Premier Company hungered and thirsted for the State's 60 per cent., and will probably get some weak parliament to let them have it as a reward for patriotism." We want no reward for patriotism, neither do we hunger and thirst for the State's 60 per cent.: we are struggling to save and protect what belongs to us, namely, the 40 per cent., upon which this Government and Parliament have already made such devastating inroads.

The law by which the Premier Company's interest in the mine is governed was passed at a time when the mine was exceptionally rich, but I regret to say, and many of you know to your cost, that ever since then the yield has fallen, and there have been very substantial fluctuations in the market value of our pro-

duct, as will be seen from the following figures:—

Year ended 31st Oct.	Yield per load.	Value per Carat.		Value per load.		Cost of Production
		£	s. d.	£	s. d.	Washed.
1903	1.29	1	7 8.5	1	15 6.7	4 7.2
1904	.798	1	3 1.2	0	18 5.3	2 7.62
1905	.609	1	3 6.29	0	14 3.98	3 3.44
1906	.301	1	8 4.82	0	8 6.61	3 5.71
1907	.290	0	18 0.20	0	5 2.49	2 4.14
1908	.258	0	14 9.40	0	3 9.75	1 10.24
1909	.249	0	12 6.29	0	3 1.43	1 11.42
1910	.230	0	13 11.39	0	3 2.49	2 0.36
1911	.213	0	16 1.97	0	3 5.34	2 2.02
1912	.205	1	0 1.50	0	4 1.57	2 4.79
1913	.202	1	2 2.05	0	4 5.74	2 6.67
1914	.185	0	17 9.23	0	3 3.37	2 5.89
1915	(Mining operations suspended.)					
1916	(Very rich lumps as well as mine ground were treated, so that the figures are exceptional.)					
1917	.184	1	6 5.48	0	4 10.38	2 2.68
1918	.177	1	8 3.29	0	5 0.12	2 2.89

It will be observed from the figures quoted that the value of the load has fallen from £1 15s. 6.7d. in 1903 to 3s. 3.34d. in 1914, and that the value of the load during the year under consideration was 5s. 0.12d. It is interesting to note that though there was a fall in the yield during the year 1918, the value of the load has increased owing to the control exercised by the great producers in regulating the production and the quantity of diamonds put upon the market. With a falling yield we can only look to an increase in the price of diamonds to give shareholders a moderate return on the high prices they paid for their shares. The profit tax, dividend tax, and export duty, with the threatened increase of export duty on rough and uncut diamonds mean a tax on the energy, enterprise, brains and money of those who have embarked their resources in this undertaking, relying upon the good faith of the Government and Parliament and upon the enforced contract between the State and the company, a contract that the Government seemingly regards and certainly treats, as a "scrap of paper." May I ask why the Government should regard a contract voluntarily entered into between the Crown and a gold mining company (the Government Areas) as more binding upon the State than one forced by them upon the Premier Company? Government Areas are not liable to pay income tax or dividend tax.

An argument has also been advanced that the return given on the nominal capital of this company is an enormous one, but I would like to point out that in order to equip the mine nearly £2,000,000 has been spent by the company. It is true that 60 per cent. of this expenditure has been deducted from the Government's share of profits received from the working of the mine, but in the first instance it had to be put up by the company and the company would have been justified in increasing its capital to £2,000,000 in order to equip the mine with the machinery and plant actually provided by the company. This would have been the procedure adopted by most people concerned in the running of joint stock companies, and such a procedure would have dissipated the argument, now being dealt with, into thin air. But those controlling the Premier Company preferred not to adopt this course, with the result that instead of having a large nominal capital with the shares at a low market price, the nominal capital remained small and the shares rose in price to a very high premium. Most of the present shareholders bought their shares at this high premium, which represented in their eyes the value of the company's interest

in the mine, and it is not fair in considering the return that has been made to base it upon the nominal value of the shares. In any case the shareholders have a 40 per cent. interest in the equipment and trading and emergency funds, and it does not matter whether the money for these was derived by the shareholders from profits or other sources: it is their money and they are entitled to a return on it. But whether the profits are huge or small is quite beside the question, the legislature, in spite of the company's protests, fixed what it considered was a fair division of the profits arising from our mining operations when the mine gave a value of 35s. 6d. per load.

What has happened in late years to justify the legislature in taking from us what justly belongs to us? Parliament is all powerful, and we have no remedy against the ruthless exercise of that power. When the Government's proposal to relieve us from the operation of the income tax was defeated no opportunity was given us of stating our case. Some time ago a newspaper commenting on the diamond business said:—

"The way in which prominent South Africans fight for the profit of overseas shareholders, but lastly, very lastly, for the country of their birth, has always been astonishing."

Now, in the case of the Premier Company it must be remembered that every share in the first instance was held by persons resident in South Africa, who sold them at enormous premiums to overseas shareholders; but I do not think I am unreasonable when I claim that even overseas shareholders are entitled to look to the Government for protection against spoliation and confiscation at the hands of Parliament or anybody else. As a matter of fact, the bulk of the shares are held by persons resident in the Union. In normal times, that is between 1905 and the beginning of the war (1914), the average market value of deferred shares in the Premier Company was £13 3s. 10d., and the dividends paid during that period in respect of the average price of these shares has been equal to a return of 3½ per cent. per annum. Mining shares are usually capitalised on a return of 10 per cent. It must always be remembered that the Government's share in the mine has cost it nothing, and that its income rises or falls as the profits rise or fall, but I strongly urge the Government is not entitled when it finds that its revenue is falling to try and make good by reducing the interest of its partner who also suffers by the fall.

Sir Percy Fitzpatrick in the debate already referred to said:—

"I do not wish to say that we have got something under the law which is not just, that because we have debts or obligations to meet that we should exercise that power ruthlessly and screw the last penny out. Justice has got to be done."

It seems that the Government has to meet certain debts and obligations, and is now casting about for new or additional sources of income.

For Parliament to exercise its power ruthlessly and screw out the amount required to meet such debts and obligations by means of an export tax on rough diamonds would, so far as the Premier Company is concerned, be in direct conflict with the noble sentiment expressed by Sir Percy Fitzpatrick, who went on to say: "In equity, as I understand it, this particular mine has not a shadow of a claim for the change in the law." (We did not claim, but protested against, any change in the law) "But

that is only half the case. Equity, I take it, applies to all parties. Now, where does equity come in with regard to the public? If it be equitable to consider whether owners' rights should be increased it is equitable also to have it considered at whose expense they are to be increased."

We endorse this statement, and paraphrase it as follows: "If it be equitable now to consider whether the Government's rights should be increased it is equitable also to have it considered at whose expense they are to be increased."

It has also been affirmed that the export duty will not have to be borne by the producer as the price of diamonds can be raised so as to meet the amount of the tax. In answer to this I must point out that the price cannot be indefinitely increased. But suppose for a moment that the price of diamonds can be raised—and it must be remembered that the price is higher to-day than ever before—to meet the proposed increase in the export duty, it would mean that a corresponding reduction in the quantity of diamonds produced would have to be made. You must always think in money and not in carats when you are considering the diamond trade. Of course, the small producers are not affected to the same extent as the great producers; the former will not reduce their production at all; but the burden of maintaining the market and raising prices to meet the increased impost will fall entirely on the shoulders of the great producers. The Government already receives from the company 6-10ths of any increase in the value of diamonds. Why should it in effect take our 4-10ths of such increase in addition to its 6-10ths to which it is justly entitled? There is nothing, so far as I know, in the Precious Stones Ordinance of 1903 to prevent us from participating in any improvement in the diamond market, which is achieved through the efforts and brains of the great producers, of whom we are one.

You will remember that when the Precious Stones Ordinance, fixing the Government's interest in the net product of any diamond mine at 60 per cent., was passed, the profit tax on gold had already been imposed by a proclamation, promulgated during the previous year, so that it is fair to assume that the Legislature intended that the 60 per cent. should cover any tax that might otherwise have been exacted in respect of the mining profits from diamond mines, and that this was the view of the Government and the Union Parliament is proved by the fact that in the Mining Taxation Act, 1910, which repealed, replaced and expanded the Profit Tax Proclamation (Transvaal) of 1903, provision was made that there should be levied annually a tax of 10 per cent. on the profits of mining for diamonds, but an exception was made—a most important and equitable exception—for we find in section 6 of the same Act that: "Whenever under the provisions of any law mentioned in the Second Schedule to this Act . . . the Crown is entitled to a share of profits . . . not less than the amount which would be leviable as taxation under this Act, no tax shall be payable thereunder in respect of these profits."

The Precious Stones Ordinance, 1903, under which we pay the Government 60 per cent. of the profits from the Premier Mine, is mentioned in the Second Schedule. Under the Act cited a tax of 10 per cent. on the profits from gold mining was also imposed. Thus it must be perfectly clear to the meanest intelligence that in 1910 the Legislature regarded the

60 per cent. interest of the Crown in the mining profits of this company as covering and including the 10 per cent. mining profits tax levied upon gold mines and other diamond mining enterprises in which the Crown was not entitled to a share. If this is not so, what other possible reason could there have been for exempting us? If anyone cared to take the trouble to read the original draft of the Precious Stones Ordinance, 1903, he will find that it was proposed that the owner should have a four-tenths undivided share in any diamond mine found upon his property, and the Crown was entitled to the remaining six-tenths. A further very important proposal was contained in this draft, and that was, that the holders of a share in a diamond mine were entitled to claim a division of the mine, and then another provision was made that the Lieutenant-Governor should have power to make an agreement with the owner of the land, on which a mine is situated, for the working thereof for such period and on such terms as might be agreed upon, but subject to certain conditions, among which was one that there should be paid to the Colonial Treasurer such proportion as might be agreed on of the annual net produce obtained from the working of the mine.

From this you will see that in the first instance it was intended that the working of a mine was a matter of free contract, under which the Crown might have received less than 60 per cent. But finally, in Committee of the Legislative Council, the Bill was amended and the right of the holders to demand a division of the mine was taken away, and further, the terms subject to which the owner of the land on which a mine is situated should be entitled to work the whole mine were laid down, amongst which terms was one that the net product should be divided between the Crown and the owner of the land in the proportion of their shares in the mine. If the owner of the land refused to work the mine, the Lieutenant-Governor had the right to call for public tenders for the working of the mine under contract on such terms as might be agreed on between the Lieutenant-Governor and the owner, subject to the profits arising from such contract being divided between the Crown and the owner in proportion to their respective holdings. I don't think anyone will contend that the Government can alter the terms of any contract entered into with a tenderer. Why then should Parliament or the Government alter the terms of our contract to work the Premier Mine? The terms of the contract under which we are working the mine are laid down in the Precious Stones Ordinance, and we were free to accept or reject such contract; but we elected to accept the contract. I don't think that anyone will contend that the Government or Parliament has any right to alter the terms of our contract without our consent. Yet we find that, notwithstanding the provisions of the Precious Stones Ordinance and of the Mining Taxation Act, and notwithstanding the attempt of the Government honourably to carry out the terms of their contract with this company for the working of the mine, Parliament capriciously, in 1914, imposed an income tax on this company in respect of the mining profits, and thereby reduced our share of such profits, and at the same time increasing the share of the Crown.

Mr. Duncan, in the course of the debate in the House justifying the exemption of the gold mines, said: "When the State gave up claims to people to work, it took what it regarded as the State's share. After the State had done that it could not say, 'We are going to take some more, as we did not take enough at first.' What we say is: 'When the State gave

up the Premier Mine to the Premier Company to work, it took what it regarded as the State's share. After the State had done that it could not say, "We are going to take a me more, as we did not taken enough at first." This is the same Mr. Duncan who was Colonial Treasurer of the Transvaal when the Precious Stones Ordinance was passed, and who, speaking on the question of the division of the mine, said: "It ill became him as Treasurer of that Colony (Transvaal) to refuse a gift horse such as was offered in the Majority Report of the Select Committee, and he hoped Sir Percy Fitzpatrick would believe him when he said he did not find it possible to agree with that report, not because he indulged in any reckless spirit of generosity, but he tried, in common with other members of the Committee, to arrive at what was just." And later he said: "As long as the State had taken a fair share it could not ask for more"; and he wound up his speech with the words, "What they should aim at was not generosity, because they could not afford to be generous, but justice." Mr. Duncan voted in the Union Parliament for the increase of the Government's share in the Premier Mine and for a decrease of this company's share by making the Premier Company liable for income tax, export duty and dividend tax.

In 1917, as I have already stated, the Union Legislature passed an Act consolidating the Income Tax Act and the Mining Taxation Act. The gold mines, which under the Mining Taxation Act had been liable to pay to the State 10 per cent. of their profits, were subject to a profit tax of 5 per cent. and a dividend tax of $7\frac{1}{2}$ per cent., which in practice worked out at less than the former 10 per cent. profit tax; whereas the Premier Company, who under the Income Tax Acts, 1914-16, was only liable to pay a maximum of 5 per cent. on its profits, was subjected to a flat rate of 5 per cent. of its profits and $7\frac{1}{2}$ per cent. dividend tax. The gold mines were sacred; the Premier Company was fair game.

The Minister of Finance, when introducing the new Diamond Export Act in 1917, admitted that the duty imposed under the former Act, then about to be repealed, was unscientific in differentiating between alluvial and mine diamonds, the former escaping duty, and he triumphantly announced that the new export duty would be scientific, inasmuch as it would be exacted in respect of all rough and uncut diamonds found in and exported from the Union. This announcement gave great satisfaction to the board of the Premier Company, and afforded it the same consolation as would, in the good old days, have been derived by a person about to undergo torture from the statement that the rack upon which he would be stretched was really a more scientific appliance than the iron boot and wedge. But, alas! we were deprived even of this melancholy consolation, for on the first sign of opposition on the part of a member whose constituency is largely composed of alluvial diggers the Minister threw up his hands and shouted "Kam-erad!" a cry at that time not so popular as it became later, and hastened to restore the exemption of alluvial diamonds from the export duty, and thus abandoned his much-vaunted scientific tax. But an export duty can never be scientific even when levied in respect of all rough and uncut diamonds; it is the most inequitable and unjust tax that was ever conceived by the mind of man—it is both crude and cruel. I shall give you some figures in a moment which will prove conclusively that the lower the rate of profit the higher the rate of tax, or, to put it in another way, the tax is in the inverse ratio to the rate of profits. Now we find the new Minister of Finance—we seem to have a new one every year—is faced with a very serious deficit, and he frankly asks "where could he turn, what articles of

luxury could he bring into the net, and still expect to be readily purchased, even if an additional duty were thrown upon it? There was an article of luxury at the present time on which they levied an export duty of 5 per cent.; he referred to diamonds. At the present rate of duty the tax was estimated to yield £340,000 for 1919-20, but he was advised that diamonds were doing well, that the price was good, and the profits not unreasonable, and that, in short, if he raised the duty to 10 per cent., including alluvials, he could get another £420,000. This he also proposed to do. If the raising of the duty also tended to encourage local cutting he would not quarrel with it. "What genius! What resourcefulness! What unexampled candour! The Minister of Finance frankly states that he wants revenue, and is going to increase the export duty in order to raise part of the required revenue. In doing this he violates the principle laid down by Sir Percy Fitzpatrick in the last quotation made by me from his speech. May I ask why the Minister does not increase the profit tax? Such a course would at least be fair in its incidence, in that each producer would pay the tax in proportion to his profits, whereas an export duty results in the rate of tax being directly increased in proportion to the fall in the rate of profits—the less the profits the more the tax!

Our contention is that the Government is not entitled to increase its share of the profits arising from the Premier Mine at the expense of the Premier Company whether by profit tax or export duty, and we base our case upon the doctrine contained in Mr. Patrick Duncan's statement that "when the State gave up claims to people to work it took what it regarded as the State's share. After the State had done that it could not say, we are going to take some more, as we did not take enough at first." If Mr. Duncan will only stick to his avowed principle about the State's share we shall look upon him as the patron saint of the Premier Company. Now let us look how your 40 per cent. share of the profits from mining operations is affected by the present taxes and duty, and would be affected by the proposed increase of duty, and for this purpose we will deal with the figures contained in the accounts submitted to you for confirmation. You will notice that according to expenditure and revenue account No. 1, the production for the year realised £1,203,903—this is the net figure to which must be added the sum of £60,195 (I am disregarding the odd shillings and pence), being the export duty of 5 p.c., so that the gross amount realised was £1,264,098. From this deduct expenses and general equipment amounting to £541,821, which leaves a balance of £722,277, from which must be deducted £120,390, being the proposed export duty of 10 per cent. on £1,203,903, which gives a balance of £601,887 for division between the Government and the company. The Government receives £361,133 and the company £240,754. If no export duty had been payable the company would have received £288,910; thus the export duty represents 16.66 per cent. of the company's profits. The company received net £240,754—5 per cent. profits tax—£288,717— $7\frac{1}{2}$ per cent. dividend tax—£211,564. The difference between £288,910, the amount the company would have received if the terms of the Ordinance of 1903 had been faithfully observed, and £211,564, the amount after deduction of export duty at 10 per cent., income tax and dividend tax, is £77,346; or in other words, the company received only 29.6 per cent. of the mining profits instead of 40 per cent., to which the law says we are entitled, whilst the Crown received 70.4 per cent. instead of the 60 per cent. to which the law entitles it. When the Government and Parliament set out upon this policy of spoliation

there was no such word as Bolshevism; but in principle I see little difference—only 29.6 per cent. at present—between our Government and the Bolsheviks.

If we take the years 1911, 1912 and 1913, when normal conditions obtained, and there was no effective control over the quantity of diamonds put upon the market, and when we were only liable to account to the Crown for 60 per cent. of the mining profits, and apply to those years the 5 per cent. income tax, $7\frac{1}{2}$ per cent. dividend tax, and the 10 per cent. Export Duty on the value of rough and uncut diamonds, we get the following results:—

In 1911 the Company would have received 25 per cent. instead of 40 per cent.

In 1912 the Company would have received 24.67 per cent. instead of 40 per cent.

In 1913 the Company would have received

25.44 per cent. instead of 40 per cent.

In 1911 the Crown would have received 75 per cent. instead of 60 per cent.

In 1912 the Crown would have received 75.33 per cent. instead of 60 per cent.

In 1913 the Crown would have received 74.56 per cent. instead of 60 per cent.

An examination of the accounts for the years dealt with by me in the remarks already made, will disclose the ratio of profit to the total value of the output, and will show if the proposed export duty had been in force during these years, by what percentage those profits would have been reduced by the payment of a 10 per cent. Export duty, and will also show clearly that the incidence of the tax increases as the ratio of profits falls.

In the year ending 31st October, 1911, the ratio of profit was 34.6 per cent.; 10 per cent. export duty would have been equal to a tax of 28.88 per cent. on the profits.

In the year ending 31st October, 1912, the ratio of profit was 33.5 per cent.; 10 per cent. export duty would have been equal to a tax of 29.8 per cent. on the profits.

In the year ending 31st October, 1913, the ratio of profit was 36.2 per cent.; 10 per cent. export duty would have been equal to a tax of 27.62 per cent. on the profits.

In the year ending 31st October, 1915, the ratio of profit was 55.4 per cent.; 10 per cent. export duty would have been equal to a tax of 16.66 per cent. on the profits.

It is quite clear from the words of the Minister of Finance that the only object in raising the export duty is to secure additional revenue; and not necessarily to encourage the establishment of a local cutting industry; if it does "he would not quarrel with it."

Now as to this local cutting industry, of which we have heard so much lately, I would remind you that last year the Chairman said:—

"You will have noticed that the question of establishing a diamond-cutting industry in the Union has again been engaging public attention. Now I wish to make it perfectly clear that this Company is in no way opposed to diamonds being cut in this country, but it most emphatically objects to being compelled to establish such an industry; it is a diamond producing Company, and it is only concerned to dispose of its raw product in bulk. If it is to the benefit of the country that a diamond-cutting industry should be established, let the country take the risk, and not ask the producers to shoulder the burden of doing so. I do not know whether those who are carrying on the campaign are aware that we are dependent upon the speedy realisation of our production to provide the large amount of money necessary to carry on our operations. Let the State, if it wishes

to create this new industry, buy our production as we sell it at present. We are not retailers, and it is therefore unreasonable to expect us to allow the eyes to be picked out of our parcels to meet the requirements of the small factories that have from time to time been established. Such a proceeding would render it difficult to dispose of the balance of our production. There is an open local market for alluvial diamonds which is more than sufficient to supply the needs of a cutting industry in its initial stages, but these diamonds are not subject to export tax, so that about 5 per cent. more would have to be paid for them locally than corresponding qualities from the mines, and thus has the ostensible reason for the imposition of an export tax been defeated."

Our policy is the same to-day. Parliament can do most things, but it cannot force us or anybody else to go in for diamond cutting, or any other kind of business, if we do not want to, and we certain do not want to: our business is the production of diamonds in the rough. Why not compel wool farmers to manufacture cloth? Why not compel ostrich farmers to dress feathers and trim hats? And, to go further, why not compel wine farmers to drink their own wines?

I know of no enterprise so well and peculiarly suited for the State to undertake as the cutting and polishing of diamonds. Such an industry ought to be a State monopoly carried on at the coast, where living is cheaper than inland, any way carried on in the Union, as far distant from the centres of production as possible. I am sure this Company would welcome the establishment of a cutting and polishing industry in the Union if it were a State monopoly, and I do not think I am going too far when I say that this Company would also do all in its power to assist the State in making a success of such an industry, if undertaken by the State. Let the Nationalists and Labour Party, who are so anxious that the State should engage in business undertakings, press the Government to embark upon the cutting and polishing of diamonds as soon as possible. I personally am prepared to join in an agitation to compel the Government to establish and carry on the diamond-cutting industry. If the State takes this business in hand seriously, and on a fairly large scale, less dislocation of the trade will take place, and the producers will feel that all

measures to protect them against breaches of the Diamond Law will be taken by the Government.

I have treated these matters purely as domestic questions affecting this Company and have not made any excursions into the field of high politics when I might have pointed out the effect of the Government's policy in its credit on countries overseas. (Applause.)

The report and accounts were unanimously adopted and the retiring directors reappointed.

There were present at the meeting: The Chairman (Sir T. M. Cullinan), Messrs. W. H. Burrill, J. Butler, P. Dreyfus, F. C. Dumat, T. D. Edington, P. Ross Frames, R. R. Hollins, B. A. Harvey, G. Imroth, W. H. Mardall, J. W. Philip, P. Richardson, J. E. Rutherford, A. Sprinz, and the Secretary (T. Edington); representing 200,085 shares out of a total of 320,000 issued.

OCEANA DEVELOPMENT.

An extraordinary general meeting of the Oceana Development Company, Ltd., was held on January 15, Mr. H. C. Emery presiding.

The Chairman said that the circular which had been issued explained very clearly the reason for convening the present meeting, and the change in the position which had arisen consequent upon the purchases made by Dr. Hans Sauer and his friends of shares in the company. Mr. Bromhead, Mr. Sidney Kennedy and himself (the speaker) were appointed directors in November, 1915. At the time they took office the affairs of the company were in a very critical condition; the shares were scarcely saleable on the market at 1s., whereas they now stood at nearly 25s. It was recognised as a fundamental principle with regard to all joint stock companies that the management of a company should be controlled by the majority of the shareholders, according to their holdings in the share capital. The gentlemen whom the shareholders were to be invited to elect on the Board held together with their friends, a majority of the shares in the company, and, strictly

within their statutory rights, claimed that they should have the immediate control of the company's management. They also claimed to be in a position to influence the introduction of a large amount of cash capital. In the provisions of the contract with Dr. Sauer, contemplating the formation of a large company to take over and work the farms Eendracht and Koppies Kraal, the right was reserved to the company of providing a moiety of the capital of the new mining company. It was therefore desirable that the company, by the introduction of such additional capital, should be in a position to avail itself fully of the rights secured for it in the contract with Dr. Sauer. Before resigning their positions, the directors thought it right in the shareholders' interests that they should ask the members of the proposed new Board if they were willing (1) to procure a guarantee of the subscription of the £100,000 additional capital for the company as and when required so that it would be able to take up its proportion of the working capital of the mining company as provided for in the boring contract; (2) that the shareholders of the company should have a pro rata right to subscribe on any increase of capital of the Oceana Development Company; (3) that the shareholders in the mining company should be allotted pro rata the options to subscribe for additional capital to the mining company which would accrue under the boring contract; (4) that no new properties, rights or interests should be acquired for the company unless the contracts for purchase were conditional and were forthwith submitted to the shareholders for confirmation. The reply of the gentlemen referred to was to the effect that the above points generally had their sympathetic consideration, and that the new Board would do everything in its power to advance the interests of the company.

Mr. A. M. Oppenheimer and Dr. Sauer were then appointed directors of the company to fill the vacancies caused by the retirement of Mr. H. C. Emery and Mr. S. S. Kennedy, and Mr. Robert Bleloch was appointed an additional director.

An honorarium of 500 guineas was voted to the retiring directors on the motion of Dr. Sauer, who said it was anticipated that the reef would be cut at a depth of 3,500 ft. If they did so, it would place the company's properties in high rank as regarded mining on the Far East Rand.

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Rhodesia and the Union.

The discussion regarding the future of Rhodesia has been given much impetus by the issue of a manifesto by the recently-formed Union Association. The signatories are Advocate Longden, Mr. J. G. McDonald, and Sir Bouchier Wrey, Bart. After referring to the certainty of radical changes following peace, and the probability of Rhodesia being affected, the manifesto proceeds: "It is our belief that changes of great moment are impending, and the Association

has been formed for the practical purpose of securing adequate consideration and discussion of various matters of importance in connection with the possible entry of Southern Rhodesia into the Union of South Africa. It is felt that every effort should be made to secure to Southern Rhodesia in any South African system the status to which she is entitled. The following points are considered by the Association to be of material importance: (1) The powers and authorities of the local administration to be defined, and the advisability of extending these powers beyond the limitation of the existing Provincial Councils, which have in the Union proved inadequate, and tended to create congestion in the central Government departments. (2) The following matters to be administered by the local administration: (a) Native labour, (b) mining laws, (c) land laws, (d) primary education, (e) bequests already made to this territory, (f) taxation for local requirements, and (g) immigration. (3) A Customs Union, especially in relation to the Rhodes' clause. (4) Our proportional share of general taxation, and limitation of the income tax. (5) Our proportional share of loans. (6) The number of Parliamentary representatives allocated to Southern Rhodesia. (7) Railway policy and rates. An assurance from the Union Government as to the development policy in railways, rates, etc., with a special view to assisting mining and agricultural industries. (8) Bilingualism. (9) Safeguarding the existing rights of civil servants. (10) Safeguarding the existing rights of railway employees. (11) No settlement to be made with regard to the entry of Southern Rhodesia into the Union without the inhabitants being given full representation at a conference to be called for the purpose of discussing this important matter. The above points are put forward for the guidance of the people of Southern Rhodesia in the confident belief that, provided such proper safeguards as are necessary can be secured, the entry of Southern Rhodesia into the Union of South Africa will bring progress and prosperity to this territory."

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

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General Manager.

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Notes and News.

Modder East Debenture Issue.

Particulars will be found in our advertising columns of the proposed debenture issue by the Modder East. The property has of late been opening up more favourably, as witness the strike of reef in No. 3 shaft announced last week, and only requires adequate financing thoroughly to test its possibilities. The Central Mining people have been financing work of late, as intimated at the last annual meeting, and the intention now is to regularise the position by obtaining power to issue £200,000 in 6½ per cent. debentures, with power to increase the issue to £500,000. The debentures are redeemable at £105 in 1921. The issue offers an attractive security, bearing a good rate of interest, is underwritten by the Central Mining people, and should be readily absorbed by the shareholders.

* * * *

S.A. Institution of Engineers.

In the absence of Mr. C. D. Leslie, the President, the chair was taken by Mr. J. W. Kirkland at the monthly meeting of the South African Institution of Engineers on Wednesday night. A vote of condolence was passed with the President on the death of his father-in-law, the late Mr. Justice Hopley. The principal paper of the evening was by Mr. G. M. Clark on "A Form of Mollier Steam Diagram," which was illustrated by lantern slides. Mr. T. Blandford contributed to the discussion on shafts by criticising the figures given for cost of cementation by Mr. C. E. Knecht in his paper on the Daggafontein and Brakpan shafts. Mr. Blandford's case was that cementation was not nearly so expensive as Mr. Knecht's figures would go to show, and it will be interesting to see how the latter deals with the matter in his reply. In regard to the discussion on jackhammers, it was announced that Mr. Catlin had been written to in America for the desired data, as suggested by Mr. Harris at the last meeting. The discussion on Mr. Elsdon Dew's paper evoked an interesting contribution on the work done on the Simmer and Jack by utilising scrap in the making of many spares for use on the mine.

* * * *

Professor Schwartz on the Kalahari Lakes Scheme.

In this issue we print the first of the series of articles by Professor Schwartz on the Kalahari Lakes scheme. The first article, it will be seen, deals mainly with Ovamboland and its possibilities, and is illustrated by a map specially prepared by the author. In view of the great interest being taken in these articles, the map should be retained by readers to enable them to follow the remainder of the Professor's articles. It is proposed to publish the series on completion in pamphlet form.

* * * *

A Work on Wire Ropes.

The many important papers on wire ropes that have in the past been read before the S.A. Institution of Engineers and its constituents, the Mechanical Engineers' Association and the old Institute of Engineers, have been collected at the instance of the Council of the Institution, and are to be reprinted in book form. To Mr. Oliver King has been entrusted the editing of the work, and he has now completed his task to the entire satisfaction of the Council. The manuscript has been sent to Mr. J. H. Rider in London in order that he may call for tenders for its printing. On receipt of the London tenders, the Council will give local printers an opportunity of quoting for the work likewise.

* * * *

Engineers and Apprenticeship.

The South African Institution of Engineers passed the following resolution at their monthly meeting, held last Wednesday night: "That this Institution views with deep concern the present situation with regard to apprentices, and urges upon the Government to inquire into the same, and to take measures to enable the youth of the country to secure training in the engineering trades." It was further resolved to send copies of the resolution to the Minister of Mines and Industries and to the Press. In moving the resolution, Mr. Martin Epton dealt with the extraordinary attitude of the Trade Unions towards the youth of the

country. Not more than one apprentice is allowed by these autocratic and short-sighted bodies to every four artisans, and public opinion must be enlisted in an effort to secure a change in this policy. Mr. J. Q. Braidwood, in seconding the motion, also spoke strongly on the unfairness and unwisdom of the Unions in the matter, and the resolution was unanimously adopted. It is nothing short of monstrous that the youth of the country, the sons of the workmen themselves, should be debarred from obtaining here the training necessary to make of them skilled artisans. The capacity of the engineering shops of the Rand to absorb them should be the only limit to the number of vacancies for apprentices, and public opinion must be aroused to oppose the artificial stultification of the youth of the country by trades union red tape and officialdom. The Juvenile Advisory Board, the Trades Schools and now the Institution of Engineers are taking the matter up, and every public body interested in the industrial welfare of the country and in the future of the youth must combine to have the anomaly removed.

* * * *

Share Tips and Medical Men.

Members of the medical profession in Johannesburg were recently made the victims of an audacious attack on their credulity. Many of our leading practitioners received a somewhat illiterate scrawl purporting to come from an employee of one of the mines conveying a strong tip to the recipient to buy the shares of the mine from which the letter was supposed to come, and on which a rich strike was said to have been made. The unsolicited "tip" was given ostensibly in grateful return for service which the doctor addressed was declared to have rendered the giver in days gone by. The signature was undecipherable, and no exact address was given. Nevertheless, some of our medical friends who dearly love a little flutter followed the advice given by their unknown benefactor, needless to say with costly results to themselves. The shares promptly dropped after the mild boom created by the flow of buying orders from the doctors, nor has the quotation yet recovered. The mine, fortunately, is a good one, and the shares may yet turn out a remunerative investment to those who have been disappointed in the immediate result of their speculation. It is difficult to find the motive that actuated the tipster. But the incident serves to illustrate what "fair game" our medical men are considered by the gambling fraternity; and those who have lost money in this way are entitled to protest against simulated gratitude taking this ungenerous guise towards innocent members of the healing profession.

* * * *

The Knight Central Strike and the Chamber of Mines.

The President of the Chamber of Mines writes to the Press as follows:—"I notice in the *Mail's* report of Mr. Forrester Brown's remarks on the Knight Central dispute that he is stated to have said that 'the Chamber of Mines has taken up quite a different attitude from what it had adopted during the past two or three years, but there was no war now.' I cannot allow this statement to pass without objection. The attitude of the Chamber of Mines in its dealings with mine employees is the same now as during the last three and a half years, namely, an endeavour to meet them in a fair and reasonable way, to improve conditions and remove genuine grievances, and to encourage the establishment of well organised unions to voice the desires of all sections of the employees. During the war period several instances arose where the Chamber found itself unable to agree with the views of the S.A. Mine Workers' Union, and there was no suggestion then that the Chamber's attitude was changing. Similarly, since the cessation of hostilities, numerous cases have been dealt with and settled between the Union and the Chamber in exactly the same spirit as during the war. In the dispute at the Knight Central, the Chamber had no wish to be brought into the matter at all; considering the dispute to be really one between two unions (the S.A. Mine Workers' Union and the Underground Officials' Association). It refused to take sides in the matter. I repeat most definitely that the

Chamber's attitude is the same now as during the war, and will continue so. It is founded upon the belief that cordial co-operation between employers and employed is the only true basis of industry. But, naturally, our future peace and prosperity depend not only upon a reasonable attitude by the Chamber, but also upon a similar attitude by the unions and their members. The decision of the S.A. Mine Workers' Union in the Knight Central case encourages me to think that this self-evident fact is appreciated by the union."

* * * *

South-West Diamonds.

The secretary of South-West Diamonds, Ltd., writes:—"With reference to the wreck of the s.s. *Nautilus*, which has already been notified in the Press, later advice has been received to the effect that it is expected to save all the gear. These advices also indicate that satisfactory arrangements can be made on the spot to continue the preliminary investigations, and the directors are taking all steps necessary towards this end. The loss of the vessel, though very regrettable, does not materially affect the position, and the company is under no obligation, as the ship is insured by the owners themselves.

* * * *

Industries at the Agricultural Show.

The thirteenth annual Show of the Witwatersrand Agricultural Society will be held in the Society's Show Grounds, Johannesburg, from the 16th to the 21st April, 1919. It is hoped at this Show to make a very prominent feature of the manufactures and industries of South Africa, as it is realised that South African products and South African manufactured goods will play a considerable part in the future prosperity of this country. The Society is anxious for the Industrial Section of the Exhibition to be thoroughly representative of all classes of manufacture, and would like to have the support and co-operation of all local industrialists in making this section a success. It is anticipated that probably 50,000 to 60,000 people will visit the Show Grounds during the exhibition, and the attendance of influential people from all parts of the Union has been a marked feature of the Show in the past, and it is felt that a particularly good opportunity will be given all manufacturers or producers to bring their goods to the notice of a very large body of consumers if advantage is taken of the facilities afforded to make the Industrial Section a really attractive one. We shall have more to say on this subject in future issues.

* * * *

The V.F.P. vs. the Rand Water Board.

The Select Committee of the Union Assembly on the Bill promoted by the V.F.P. and Rand Mines Power Company has finished its labours, and the army of engineers, water experts and legal representatives employed by the V.F.P. and by the opposing Rand Water Board has returned from Capetown. Both sides claim to have secured the victory, but the plain man may well wonder whether the expense (variously estimated at from £15,000 to £20,000) has been justified. Both sides paid their own costs. Details of the questions at issue between the Board and the Power Company were given in our issue of January 25 last; and the Bill, as finally amended by the Select Committee seems to succeed as nearly as possible in pleasing everybody. The proceedings before the Select Committee were not without their humorous side, due to the pathetic lack of familiarity evinced by several of the backveld members towards the current vocabulary of modern industrial technology. Thus, after many days of tedious evidence and argument between the opposing experts, it was a little disheartening to them that a grave and grey-bearded legislator should find it necessary to say in puzzled accents: "Before we go any further, gentlemen, may I ask how many gallons are there in a kilowatt!" It is fortunate for all concerned that they had not to deal with a real puzzler like "entropy," which as used in the kinetic theory of gases was defined by Mr. Clark before the S.A.I. of E. on Wednesday night as "the logarithm of the probability of a complexion!"

TOPICS OF THE WEEK.

AN INDUSTRIAL COMMISSION.

NOTWITHSTANDING the expressed opposition of a section of the Labour people, the Government has decided to proceed with the appointment of an Industrial Commission as announced by the Minister of Mines in the Assembly last week. To avoid even the appearance of the Commission being of a shelving nature, every effort is being made to expedite a decision regarding the personnel and the terms of reference. The former will, doubtless, be strong and representative of all the interests involved, and the latter will have to be of the widest and most comprehensive description. The visit of the Secretary for Mines and Industries, Mr. Warrington Smyth, to the Rand this week has been largely concerned with the work and constitution of the proposed Commission, and Mr. Malan will doubtless lose little time, after the return of his lieutenant to Cape-town, in announcing all the details. So many and varied are the demands of organised labour in the different trades and industries that there is reason for the utmost expedition, consistent, of course, with the most careful consideration, in bringing into being the promised Commission. We are confident that nothing but good can result from its labours, and we have in the Whitley Commission in England a striking object-lesson in the possibilities for real amelioration of industrial relations possessed by such a body. The time has come, Mr. Malan said last week, for the re-consideration of questions of hours, wages, colour bar, and conditions of labour. The Acting Prime Minister also referred to the position of certain coloured workers who are the victims of the building strike, and who are stated to have been pulled out and intimidated by strikers. To them Mr. Malan promised police protection, and assuredly their whole position must be considered by the Commission. Another burning question to be dealt with concerns apprenticeship in the engineering trades, now becoming pressing because of the refusal of the trades unions to alter the ratio of apprentices to artisans that may be taken on. The attitude of the Industrial Federation in refusing to co-operate in the scheme for a Commission until the Trade Union Conference in May is not easy to understand. The whole purpose of the proposed Commission appears to be that an authoritative body, thoroughly representative of employers as well as employed, should investigate expeditiously questions which have come into the arena of serious industrial concern. The proposal has been put forward not in the spirit of shelving discussion or producing a purely academic report which will be pigeon-holed as soon as it has been presented. It represents an honest and genuine attempt to deal with the situation. We note that in the Assembly this week most of the speeches contained some reference to the industrial position. Thus, Mr. Duncan, in his speech on the Budget, dealt almost exclusively with the labour situation. He welcomed the proposed Commission, provided that it is not to be an academic affair, and recommended that it should give full consideration to the relations of native and coloured labour to the European position. The natives, he said, were organising. We had taught them to understand the power of labour, and we must teach them that we were ready to meet them along reasonable lines, and to give them "a place in the commonwealth." On the general position he said that we must choose between allowing things to drift into "a wild revolutionary scramble," or recognising the community of interest between employers and employed. Employers must recognise the right of labour to organise. Employed for their part must realise that the way of peace does not lie along the road of revolution. The obligation resting upon employers was expressed in other words recently by Sir Evelyn Wallers, President of the Transvaal Chamber of Mines. "We have," he said, "to put the questions of wages, hours, holidays, working conditions and living conditions on a basis that is right, not because it is expedient, but because it is right, and having done that you are on clean, clear ground." The same principle has been

affirmed by the chairman of a big industrial concern in England when he says: "We are prepared to perform our duty, not as a matter of bargain in return for something done to us by the State, but because it is our duty." On the other hand, the employee must be educated up to a just appreciation of the wage question. "The pressing of wages beyond a certain level," the Secretary of the General Federation of Trade Unions in England remarked in a recent interview, "is much like unduly forcing the pressure of a steam boiler. The engineer knows that a boiler will safely carry so many pounds of pressure per square inch. If he doubles the pressure he does not increase the power capacity of the boiler. What he does is to send the boiler out of the window, and he goes along with it. That illustration represents an immutable law. There is no escape from it. When the workman learns this lesson it will be an advantage to himself and to the community." In England they are a stage in advance of us in South Africa, the National Industrial Conference of employers and employed progressing smoothly. According to the cables, a provisional joint committee of the Conference has appointed three sub-committees. The first is to make recommendations concerning methods of negotiations between the employers and the trade unions, including the establishment of a permanent Industrial Council to advise the Government on industrial and economic questions; also methods of dealing with war advances and methods of regulating wages by law or otherwise. The second is to make recommendations regarding the desirability of legislation for maximum working hours and maximum wages. The third is to consider unemployment and make recommendations for its prevention, and for the maintenance of unemployed where unemployment cannot be prevented during the present emergency period and on a permanent basis. It will be to our advantage to follow the achievements of the Conference in England, and to apply as far as possible its hard-won decisions to our own particular problems. The number and variety of the labour demands put forward of late in this country go to show that there is a distinct tendency for the industrially young countries like South Africa to follow hotfoot upon the old. Nothing but a Commission, armed with the widest powers and composed of the best personnel available, can meet the increasingly complex and serious needs of the situation.

A £1,000,000 Industrial Bank!

It is understood that the plans are well advanced of the new Industrial Bank with a capital of a round million which is being promoted by the National Bank of South Africa. The new bank will absorb the Industrial Development Company, Ltd., which, it will be remembered, was floated by the aid of the big mining houses and the banks, with a capital of £100,000. The capital of that company was found inadequate to satisfy the ever-growing financial demands of local industries and the new bank should prove none too large to meet the necessities of the case.

* * * *

A New Mine Managers' Union.

The latest contemplated union is understood to aim at including the mine managers of the Rand in its sphere. Of course, the managers are already catered for by the Association of Mine Managers, but the latter body, rightly or wrongly, is regarded as too closely connected with the Chamber of Mines, and as being too directly dependent on the mining companies for its existence. The new body will be at once wider in scope, embracing all mine managers, whether of gold, coal, diamond or base metal mines, and more independent of the employers. It will specialize apparently in matters affecting the status and pay of the mine managers, and its career, we need hardly say, will be watched with great interest.

NEW SHAFT FOR THE GEDULD.

Work on a Five Compartment Rectangular Commencing Next Week—The Mine Opening Up Well.

THE board of directors of the Geduld Proprietary Mines have decided to sink a new vertical shaft on the property. This shaft, which will be known as No. 7, will be located at a distance of approximately 2,500 feet from the southern boundary of the property, and at a point about equidistant between the incline from No. 3 shaft and what is known as the intermediate incline. Both these inclines are down to depths which will readily admit of connection being effected with the new shaft which, it is expected, will cut the reef at an approximate depth of 2,500 feet. Connection of these inclines with the new shaft will give free ventilation throughout and permit of rapid development of the southern portion of the mine. The matter is briefly referred to in the

report of Mr. P. M. Anderson, in his annual report, which appears elsewhere in this issue. Mr. Anderson writes:—

"The progress made in the sinking of the intermediate and No. 3 incline shafts into the southern area was 2,233 feet and 1,129 feet respectively. Sinking in the latter has been stopped, as it has reached a sufficient depth to permit of a connection being driven to the position of a new vertical shaft, which is to be sunk to serve the southern portion of the property."

Work in connection with this shaft, which will be rectangular in shape, and will have five compartments, is commencing next week. The Geduld mine is looking exceedingly well at present, and the ability of the company to continue to earn satisfactory profits appears to be assured.

German Interest in British Companies.

Lecturing before the Secretaries' Association recently on the report of Lord Wrenbury's Committee on Company Law Reform, Mr. F. Porter Faussett, B.A., LL.B., said he considered that the proposal that certain companies should be required to disclose the nationality of shareholders was a good one, but he saw no cogent reason to confine this proposal to "key" industries. It seemed desirable to apply it to all companies, placing the onus upon any particular company to give sufficient reasons to the Board of Trade why it should be excused from the obligation. With regard

to foreign shareholding in British companies, he thought that this should be limited to 30 per cent. of the capital and that the British control of the company should be preserved by means of a similar institution. On the subject of keeping out enemy influence, the lecturer said the main point was to prevent enemy control, and he suggested it would suffice—except possibly in the case of "key" industries—to withhold the power of voting from German shareholders. Any endeavour to render it impossible for Germans to acquire interests in our companies must fail, as any person acquainted with the intricacies of company law would recognise.

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IS THE GRAVITY STAMP DOOMED ?

Revival of an Old Idea Results from a Study of Modern Rand Practice—The Evolution of the New Metallurgy and the Possibilities of the "Newer" Practice—The Old Question—Stamps v. Rolls—Duties of Over 20 Tons per Day on the Far East Rand—How Screening has Increased in Coarseness—The Mills that Grind Exceeding Large—Slime Once a Bugbear now Producing the Bulk of the Gold.

FEW novel ideas have come into practice in Witwatersrand metallurgy during the last decade. Sixteen years ago Mr. H. S. Denny (who was at that time second in command to his brother in the technical administration of the affairs of the General Mining & Finance Corporation) read his noteworthy paper on Main Reef Milling and Cyaniding Practice, and proposed certain reforms which had previously been adopted in other parts of the world, notably in Western Australia. Mr. Denny's valuable contribution to the technical literature of these gold fields was very quickly followed by the adoption of some of the innovations suggested in his paper. The New Goch and Glen Deep erected tube mills, fine grinding soon became general practice at most of the large and modern mills of the Rand, the mill screening employed became coarser and coarser, and the duty of stamps, which in 1903 seldom exceeded five tons in the 24 hours, rose to proportions which demonstrated that the functions of the gravity stamp battery had in some degree been changed. The new metallurgy grew apace, and before long tube mills were installed from one end of the Reef to the other. Fine grinding became part and parcel of Main Reef practice, and slime which was the bugbear of the metallurgist in the earlier days of the fields quickly lost its terrors. Then followed a period in which the practical ramifications of the new metallurgy were extended to the adoption of filter presses and agitators, and as knowledge of these devices became extended and practice improved, the tendency to create more and more slime advanced in keeping with the growing tendency to make the apertures in the mill screening coarser and to throw more and more duty upon the tube mills. To-day no less than 80 per cent. of the gold recovered by a leading mine is obtained from the slime product.

The evolution of the new metallurgy can easily be traced from the early part of 1903, when there was not a single tube mill at work along the Reef, up to the present day, when we find that every mine from South Randfontein to Springs employs one or more of these machines for secondary pulverisation of the ore, and that between 300 and 400 tube mills are in daily operation. The development of the new metallurgy has been even and unchequered, and for the last year or two it has seemed as if we have reached a stage of general practical perfection. Details are constantly being experimented with or improved on, but the general impression has been that we have attained to an established technical status of high capacity, reasonable cost and low residues which does not offer or suggest much scope for the adoption of any very important or epoch-making ideas.

Bearing all this in mind, it is at least interesting to learn that there is a suggestion that in the equipments of the future the gravity stamp may disappear altogether. In support of this view it is pointed out that screening as coarse as a $\frac{1}{2}$ inch mesh is being employed in at least one of the newer mills, and it is contended that ore can be reduced to this size by means of a system of stage crushing in rock breakers, and by the employment of a form of crusher combining both the gyratory principle of the Gates type with the percussive action of the Blake-Marsden. We understand that the Sturtevant crusher is considered to comply with the necessary requirements, and there is one school of thought which claims that by the employment of these methods the stamp battery with its notoriously heavy capital charges becomes unnecessary. The employment of very coarse mill screening has resulted in the duty of a stamp being increased to a figure unheard of 12 or 15 years ago. On the Further East Rand there are three or four reduction plants in which the amount of ore crushed is over 20 tons per diem. In January, for instance, the duty per stamp at the Government Areas was nearly 25 tons in the 24 hours,

whilst at the Modder Deep it was 23·8 and at the Van Ryn Deep 22·4 tons. Latterly the Chamber of Mines has discontinued the inclusion of a column exhibiting stamp duties in the monthly analysis of output. This publication now, however, gives more detailed information in regard to stamps and tube mills erected and at work and running time in respect of both forms of ore crushers, and the following table of stamp duties on the newer Far East Rand mines, compiled from the Chamber's January returns, should be instructive in connection with the subject of the present achievements and functions of gravity stamps in the more modern plants of the Rand:—

	Erected.		At Work.		Days Milling.		Tons Crushed.	Stamp duty per 24 hours.
	Stamps.	Tube Mills.	Stamps.	Tube Mills.	Stamps.	Tube Mills.		
Brakpan	140	12	110	10	23·0	26·94	42,000	16·6
Govt. Areas	200	25	180	22	23·77	24·83	106,500	24·8
Modder B.	104	8	104	8	27·01	28·66	58,000	20·6
Modder Deep ...	70	8	70	8	26·66	26·88	44,400	23·8
New Modder ...	236	15	236	15	22·44	21·86	76,000	14·3
Springs Mines ..	80	8	80	8	18·87	20·14	33,350	22·1
Van Ryn Deep.	90	9	90	9	21·2	25·07	42,900	22·4

These figures demonstrate that the tube mill now performs a considerably greater proportion of the work in the reduction plant than it used to, and the contention under consideration is that large savings on capital account can be effected in new plants by eliminating stamp batteries altogether and feeding the product of the final crusher direct into the tubes. The idea is not a novel one. Many attempts have been made in other parts of the world to supplant the gravity stamp by utilising rolls, grinding pans and other devices. In most instances the cost of maintenance has been the chief factor detrimental to the substitution of other devices for the Californian stamp, and the claim that the employment of crushers of combined gyratory and percussive action can prove satisfactory rivals to the present system of crushers and stamps will have to be proved before it finds many adherents. Although the scheme broadly is not a new one, it is interesting to find that the revival of a project which seeks to sound the death-knell of the gravity mill is in large measure due to a study of the results secured by modern Rand milling practice.

INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- March 25.—West Rand Main Reef, Trust Buildings.
- March 25.—Cassel Coal Co.—Lace Buildings, at 11.15.
- March 26.—Randfontein Deep, Ltd.—Sixteenth Ordinary General, Board Room, Consolidated Buildings, at 10.40 a.m.
- March 26.—Delagoa Bay Lands Syndicate, Ltd.—Sixteenth Ordinary General, Board Room, Consolidated Buildings, at 10.25 a.m.
- March 26.—Barrett's Rietfontein Syndicate, Ltd.—Ordinary General, Board Room, Consolidated Buildings, at 10.35 a.m.
- March 26.—Withok Proprietary, Trust Buildings.
- March 27.—Marshall's Township Syndicate, Board Room, Trust Buildings.
- April 17.—Apex Mines, Ltd.—Twenty-second Ordinary General, Board Room, Fourth Floor, National Bank Buildings, at 11 a.m.
- April 22.—Princess Estates, at 3 p.m.
- April 23.—Modder Deep Levels, at 10 a.m.
- April 23.—Geduld Deep, at 3 p.m.
- May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.

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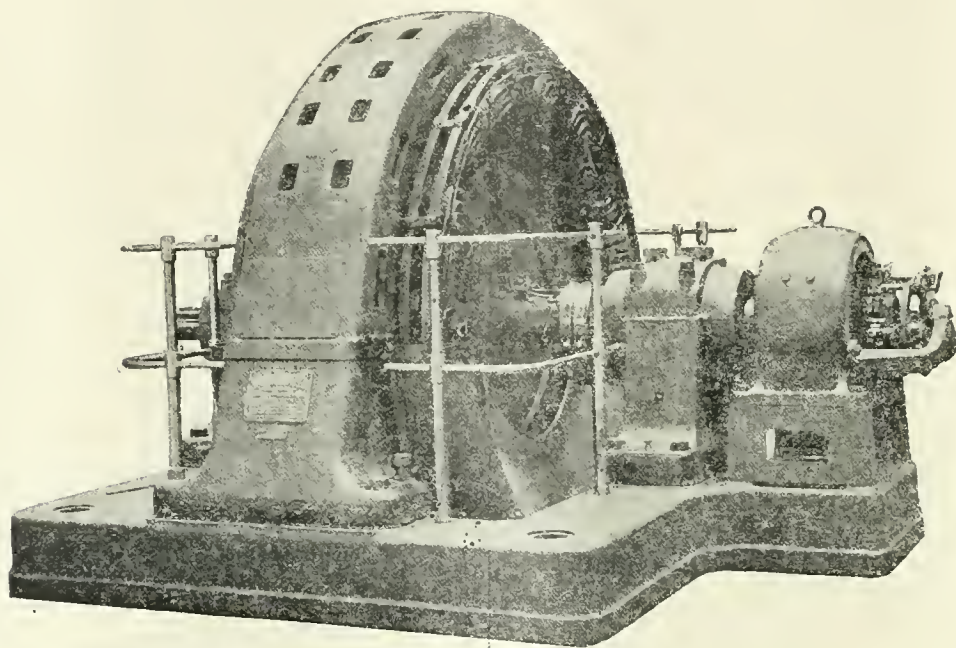
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THE GREATER HEIDELBERG GOLDFIELDS.—III.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

Dr. Mellor's Researches and Declarations—Mr. Bleloch Throws Down the Gauntlet—Scientific Geology and its Greater Economic Aspect—Some Commercial Results of the Controversy—The Southern Van Ryn and Houtpoort Appear—The Platkoppie Flotation and Dr. Corstorphine's Report—A Formidable Array of Geologists in Support of the One Reef Theory—Dr. Molengraaff Hears a Voice Crying in a Wilderness of Wealth—The C.M.S. Take Over Daggafontein—The Gold Fields and the Southern Van Ryn.

In the two previous articles of this series the general position obtaining in the Heidelberg area to-day was described and the rise of the Far East Rand referred to at some length, whilst a brief history of the areas under consideration brought us up to the delivery of Dr. Mellor's noteworthy paper on the geology of the Eastern Witwatersrand. Dr. Mellor, who is now consulting geologist to the Central Mining and Investment Corporation, was the Acting Government Geologist when this paper was read, and in view of Dr. Mellor's position and reputation his opinions are certainly entitled to the very weightiest consideration and respect. Dr. Mellor's pronouncements, in the minds of many people, set the seal on the theory of the identity of Nigel, Van Ryn and Main Reef Leader, and his declarations aroused so much attention and were accompanied by such a wealth of detail and observation that they must be referred to at some length.

A DECLARATION OF IDENTITY.

In the course of his paper Dr. Mellor stated that the remarkable continuity of the so-called Black Bar, among other beds of the Main Reef section, had enabled him to conclude without hesitation that the Main Reef series, as it is called, extends from the Central Rand to the mines of the Far East, and that what is known in that area as the Main Reef, in the Kleinfontein and other properties, is the Main Reef Leader of the Central Rand, while the "shale" footwall is the Black Bar in one or other of its modified forms.

In other words the view of the Geological Survey, as expressed by Dr. Mellor, was that the so-called Main Reef of the Blue Sky, New Boksburg, Van Ryn, Apex and Kleinfontein, Government Areas, Springs Mines, etc., areas is unquestionably a portion of what is known as the Main Reef series of the Central Rand, and that the ore-body usually spoken of as the Main Reef in the Far East is to be correlated with the Main Reef Leader of the central mines, while the Main Reef itself has practically disappeared in the more distant field.

The identification of the Van Ryn Reef on the Far East Rand with the Main Reef Leader of the Central Rand having been maintained by Dr. Mellor, he was enabled to carry the disension somewhat further by a description of the broad structural features of the Upper Witwatersrand System in that area. The more or less gradual diminution in thickness of the various zones of the system was referred to, and the well-known thinning of the various groups of beds towards the east as well as towards the west of the Central Rand was dwelt upon at some length and illustrated by means of carefully prepared diagrams and sections. According to Dr. Mellor the evidence of borehole results and of various deep shafts in the region of the Far East Rand demonstrate clearly that the strata become more attenuated still as the Boksburg neighbourhood is passed, and it is apparent that the line of most rapid thinning lies in a north-westerly and south-easterly direction from the vicinity of Brakpan towards

Daggafontein. The Doctor claimed, however, that the several reef horizons and more prominent zones of strata maintain their individuality, so that there can be no doubt whatever with regard to the identity of the Van Ryn Reef zone, consisting of the Main Reef Leader of the Central Rand and associated beds, with that of Daggafontein and the Nigel.

HATCH'S THEORY FINDS CONFIRMATION.

In saying this Dr. Mellor was merely confirming what Dr. Hatch and Dr. Henderson had contended before, and there was nothing very novel in his views. What was new in the paper, however, was the proposition put forward by Dr. Mellor with regard to the origin and process of formation of the auriferous bankets. Various features which had made themselves strikingly apparent to him during the course of his lengthy and minute investigation of the great thickness of strata between the Orange Grove quartzites and the Elsburg conglomerates, compelled him to devote considerable time to a study of this question of origin and deposition. There was, for instance, the remarkable persistence over long distances and wide areas of certain members of the vast geological succession which are of a coarse and conglomerate nature; not only those that are of great average thickness, but those, also, that are of narrower dimension. The Government Reef and the speckled bed were referred to particularly in this connection and Dr. Mellor put forward the theory that the conditions of formation of this bed were those which are to be found in deltaic areas.

Dr. Mellor pointed out that in the Nigel Mine, where the reef has been exhaustively mined, a peculiar feature of the "banket" bed is its distribution in elongated patches of conglomerate separated by what may be termed "channels" of quartzite in which the pebbles are few in number or altogether absent. A gradation in coarseness takes place between these alternating portions of the bed, and the auriferous content is apparently influenced by the varying character of the conglomerate as it gives place to the finer material of the reef. These patches of conglomerate, according to Dr. Mellor, have an average width of about 650 feet, and a mean length of approximately 4,000 feet. The average width of the intervening bands of quartzite was not given, but from the diagrams they seemed to be much narrower than the pebble bands. The strike of these patches is generally north-west and south-east. At Brakpan, again, to the north-west of the Nigel, or in the direction shown by the patches in the latter mine, similar channels of conglomerate are found, with a width of about 1,000 feet, and a length of something like 8,000 feet. At Kleinfontein, also, the patches are in evidence, and are 1,200 feet, or so, wide.

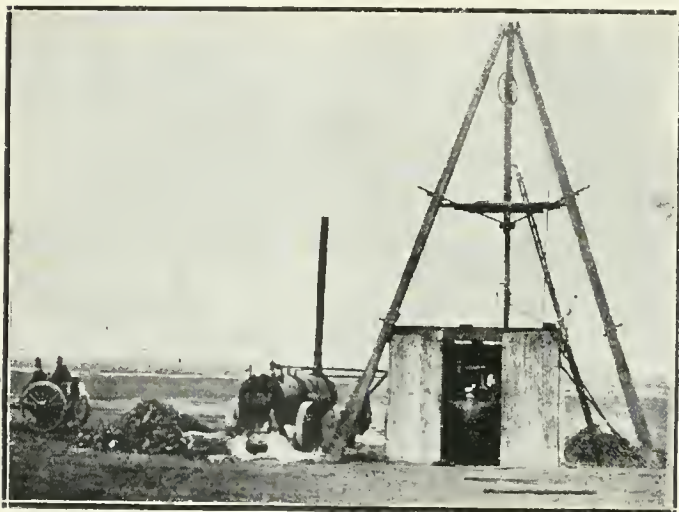
MR. BLELOCH CHALLENGES DR. MELLOR.

Dr. Mellor's lecture was almost immediately followed by a challenge on the part of Mr. Bleloch. Mr. Bleloch threw down the glove on the grounds that Dr. Mellor was reported to have defied "all unorthodox geologists and prospectors and less learned observers" to pick out Main Reef Leader banket from among a mixed lot of Main Reef

Leader and Van Ryn footwall reef." Mr. Bleloch wrote to the Editor of the *South African Mining Journal* and offered to take up this challenge and also claimed his ability to separate in a similar way "specimens of Van Ryn Reef from specimens of Nigel Reef provided that in each instance the specimens had portions of the footwall shale attached."

THE VARIABILITY OF THE BEDS.

Dr. Mellor, in preparing his report upon the work of the Geological Survey along the Witwatersrand, laid particular stress upon the great variability of the beds which underlie the Main Reef Leader and which separate that bed from the Main Reef itself. He pointed out that this matter was of particular importance because from it have arisen most of the uncertainties in the correlation of the Reefs in various mines and particularly in the correlation of the Central with the Far Eastern Rand. "In this connection," he wrote, "it is especially important to bear in mind the part played by the slaty development of the intermediate beds which have been referred to under the name of 'Black Bar.'" Dr. Mellor stated that the evidence afforded by a chain of boreholes connecting the Reef at Brakpan with that at Springs and Daggafontein, and these again with the Nigel Reef, places the identity of the latter with the Van Ryn Reef beyond reasonable question. Such differences as are found in the reef at the two localities are consistent with all the intermediate evidence and are not



DIAMOND DRILLING ON THE SOUTHERN VAN RYN.

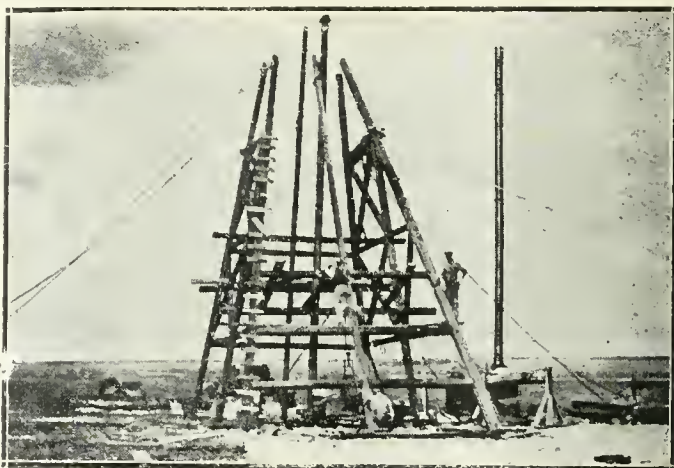
greater than those found in continuous bodies of reefs exposed within the limits of a single mine. I have recently had opportunities of examining much valuable evidence from numerous borehole and shaft sections and from surface prospecting in the neighbourhood of the Nigel Mine. The agreement between it and the Daggafontein section is remarkably close and there can be no doubt about the correlation of the two, supported as it is by numerous intermediate boreholes."

THE AMYGDALOID AS A MARKER.

The Doctor also stated that one of the most important "markers" over the whole Eastern Rand is undoubtedly the amygdaloidal sheet which lies close above the Bird Reefs and might well be called the "Bird Amygdaloid." It is important to note that in reference to the amygdaloid that Dr. Mellor referred to the probability of the existence of a subsequent intrusive sheet which followed the horizon of the amygdaloid in some localities. The importance of the amygdaloidal diatase as a geological factor in the one reef versus two reef controversy must here be drawn attention to; for the question whether the amygdaloid can fairly be regarded as an accurate marker or not is one of the main bones of contention between the orthodox and heterodox schools of thought.

THE HALL MARK OF THE GEOLOGICAL SURVEY.

Dr. Mellor resigned his position as Assistant Director of the Geological Survey of the Union of South Africa in May, 1916. His ten years' work in the Transvaal and particularly on the Rand, had been most valuable and informative, and general regret was expressed at his decision to vacate his important post. He had, of course, met his critics. Mr. David Draper, for instance, objected to the deltaic theory of deposition, and Mr. Bleloch's challenge remained, whilst several members and associates of the Institution of Mining and Metallurgy criticised the paper read before that society, entitled "The Conglomerates of the Witwatersrand." This latter important contribution was, of course, based on data accumulated by Dr. Mellor during the tenure of his office with the Geological Survey, and whilst it naturally provoked academic criticisms it also drew forth warm praise from a host of mining engineers and geologists, prominent amongst whom was Mr. H. F. Marriott, the chief consulting engineer of the Central Mining and Investment Corporation. It has been necessary to refer to Dr. Mellor's paper at some length because his interpretation of Rand geological problems gave the authority of the Government Geological Survey to the theory enunciated by Hatch in 1904 that the Nigel-Van Ryn and Main Reef series were one and the same and that in the absence of one continuous and unbroken line of development from the "legitimate" Central Rand down to the Nigel and beyond no more definite data



INCLINE SHAFT ON THE SOUTHERN VAN RYN.

could be obtained than that adduced by Mellor in support of this contention. The large areas of disturbance which occur between Johannesburg and Heidelberg preclude the practical possibility of such a tunnel of enlightenment as that referred to above, and therefore it is contended by many that Dr. Mellor's correlation of the reefs of the Central Rand, Far East and Heidelberg areas is likely to remain as the last word on a subject which is of great scientific interest and of infinitely greater economic importance. Mr. Bleloch, however, remained unconvinced and non-repentant of his sins against the geological orthodoxy. Dr. Mellor's views had interested the doctors and aroused academic discussion from the savants, and there for a while we may leave the academic aspect of the problem and turn to its much more important commercial influence. We find Dr. Mellor giving his views on State mining on the Far East Rand before the State Mining Commission in 1916, and it is of interest to note that in the middle portion of that year his findings in regard to the identity of Nigel series with the alluring attractions of the Main Reef series and the reefs worked in the Modderfontein-Van Ryn area were beginning to be applied to support and foster commercial enterprise.

Thus we read in the *South African Mining Journal* of July 1st, 1916, that "the directors of the Oceana Development Company have announced in London that information

has been received that the extension of the Nigel (or Van Ryn) Reef has recently been located on the farm Platkoppies No. 63, south of Heidelberg township, and fully 30 miles south of the Daggafontein shaft. The reef is reported to be well defined, and, where struck, to have assayed 36 dwts. over a width of 14 inches. The statement adds: 'The interest of this information to shareholders in the Oceana Development Co. is the accumulating proof that the company's farms Eendracht and Koppieskraal are well within the area of the extension of the reef now being worked by the principal companies in this district.'

HETERODOXY BACKED BY CAPITAL.

But it was also evident that there were those whose opinions were in contradiction to Dr. Mellor's and who did not hesitate to back their heterodoxy with cash. Thus we find that in April, 1916, the *Journal* records the fact "that the findings of the Geological Survey are not generally accepted by prospectors and others for practical purposes finds a proof not only in the Further East Rand but a good deal nearer home." This remark applied to the pegging of 300 claims supposed to contain the Van Ryn Reef along the southern boundary of the New Rietfontein G.M. Company's property on a line assigned by the Government Geological Survey to the Government Reef series. In the same issue of the *Journal* we find, too, the following:

SOUTHERN VAN RYN REEF.

"We are officially informed that this company's borehole No. 4 attained a depth of 770 feet last Saturday. After passing through the coal measures with about 15 feet of dwyka at the base the drill entered Witwatersrand quartzite at 60 ft. and from that depth downwards has exposed a typical section of the beds usually found overlying the Van Ryn series, that is, the beds between the Chimes series and the Van Ryn. No shales, beds or dykes have been encountered, and only three small pebble beds of less than six inches in width were found down to 770 ft. At 770 ft. a banket leader, six inches wide, was cut, and at 772 ft. a section of thirty inches of quartzite with scattered pebbles and containing three distinct bands of reef."

DEVELOPMENTS ON VARKENSFONTEIN.

The Southern Van Ryn Reef had been registered in March, 1915, to acquire 1,000 claims on the farm Varkensfontein 217 in the Heidelberg district. Other claims were subsequently acquired, and to-day this company possesses an area equal to 1,661 claims on Varkensfontein and Draaikraal. The original geological thesis upon which this company was floated was that it contained both the Nigel and Van Ryn Reefs, nor the Nigel or Van Ryn Reef. The leading promoter of the enterprise was Mr. W. E. Bleloch, so that it is not difficult to understand Mr. Bleloch's opposition to Dr. Mellor's identification of the Van Ryn and Nigel. Mr. Bleloch crystallised the importance of his contention at the last meeting of the Southern Van Ryn, when he declared: The Nigel Reef has been worked for 30 years by the Nigel Gold Mining Company and the Sub Nigel, and, generally speaking, it is a thin reef with well developed pay shoots, which brings the grade of ore above the average. This reef has been found to carry 30 per cent. to 35 per cent. of these pay shoots in a given area, but the reef is thin and the tonnage found in the pay shoots in this reef is not very great. As an example, the Sub Nigel after a good many years' working has only 400,000 tons of payable ore developed on the Nigel Reef, whereas in the great mines to the north, such as Government Areas and New Modder working the Van Ryn Reef, the tonnage of payable ore runs into many millions, and it means that if such development continues at that rate the value of the Government Areas mine will run to £100,000,000.

The fame and richness of the Van Ryn Reef as worked by the great mines of the Far East Rand needs no further encomiums here. It is not surprising that Mr. Bleloch attaches much greater importance to this ore body than to the reef worked in the Nigel mine, and apparently Mr. Bleloch has not been alone in his desire to have this

glorious symbol emblazoned on the banner of his interests. It is to be noted, for instance, that the Sub Nigel, Ltd., in their report for the quarter ended September 30, 1916, state: "It will be noted that the reef upon which this company is working is in this report described as the Van Ryn Reef instead of as the Nigel Reef as heretofore, as it is accepted by our engineers that the reef in question correlates with the Van Ryn Reef as recognised in the large and well-known northern mines of the Far East Rand."

DR. CORSTORPHINE AND THE PLATKOPPIE SYNDICATE.

The Platkoppie Syndicate was registered so long ago as 1909, but it does not appear to have sought much notoriety or importance until the late Dr. Corstorphine reported in favourable terms on the property in the middle of 1916. In the course of his report Dr. Corstorphine dealt with the theory of the identity of the Nigel-Van Ryn and Main Reef Leader. He wrote: "It has often been urged against this correlation (1) that at Nigel there is only one reef, instead of the three typical of the Main Reef series on the Central Rand, (2) that the one reef is a very narrow one, and (3) that it rests on a slate footwall, which is never the case on the Central Rand." All of these objections are sufficiently answered by the fact that in the East Rand Mines the gradual replacement of the sandstone or quartzite footwall by slate can be traced, and there too the thinning out of the reef series is shown in the mine workings. Dr. E. T. Mellor has recently correlated the ore reef of the eastern portion of the Rand with the Main Reef Leader of the Central Rand—a correlation which may be accepted for the Nigel district also. Several reefs have been traced through the farms Nooitgedacht, Elandsfontein and Platkoppie by Mr. John Moffat, on behalf of the Platkoppie Syndicate, Ltd., and on the two last-named farms he has exposed the reefs by trenching and prospecting shafts. There is some old prospecting work on Nooitgedacht and on the northern portion of Elandsfontein, but the continuation of the Nigel Reef on the southern part of Elandsfontein and on Platkoppie is exposed for the first time in the present prospecting work. This means that some four miles of unprospected outcrop have been added to the stretch previously known and partly prospected." Following on this report came the flotation of the Platkoppie Exploration Company with a nominal capital of £20,000 to test the value of the areas referred to by Dr. Corstorphine.

ONE REEF OR TWO REEFS?

These two concerns—the Platkoppie and the Southern Van Ryn—in the geological premises upon which they have been floated crystallise the whole issue of the modern controversy. The former represents the view that there is one reef and one reef only, which has been proved by experience to contain gold in payable quantities over such large areas that wherever it may be found the chances are that a profitable mine will be developed. This reef is the Nigel-Van Ryn-Main Reef Leader, the varying names being merely local designations and the identity of all three are vouched for by the most distinguished geologists of the country. On the other hand we have the theory, of which Mr. Bleloch is the sponsor, that not only the Southern Van Ryn but a vast area of the Eastern Rand contains the Van Ryn Reef overlying the Nigel—that there are, in fact, two profitable conglomerate bodies of which the upper or Van Ryn is infinitely more valuable. Mr. Bleloch's belief is that this country, its Government, its financiers, its mining engineers, and its geologists are blind to a fact which, if proved means that the auriferous resources of the Southern Transvaal are infinitely larger than they are believed to be by the orthodox school of thought and practice. If Mr. Bleloch is correct it will within a few years mean a vast enrichment of South Africa and an ability to produce sufficient gold to solve the currency problem and redeem the colossal issues of paper promises which the belligerents in the world war have scattered without anything approaching an adequate gold reserve. We submit, therefore, that the whole question is of such pressing importance that a lengthy preamble has been necessary in order

to record the developments which have led up to the present controversial position and to show the gradual establishment of the essential divergencies of opinion and the main geological evidences upon which these divergencies are based.

DR. MOLENGRAAFF GIVES AN OPINION.

It should here be pointed out that whilst Mr. Bleloch would appear to have obtained very little encouragement from present-day leading geologists and mining engineers his theories have found a certain measure of support from no less an authority than Dr. G. A. F. Molengraaff, formerly State Geologist. We have been privileged to quote from the following letter written by Mr. Bleloch to the directors of the Houtpoort, Ltd., and dated November 5th, 1918: "I will present," wrote Mr. Bleloch, "the following statement by Dr. Molengraaff, a geologist of European and I might say world reputation. I will add that I have the same opinion stated in writing by the late Mr. J. G. Curtis, another eminent geologist, formerly of the Geological Survey of the United States, who had over a quarter of a century's experience of these Witwatersrand Reefs, and I will add that this is the opinion originally held right from the early days of the Rand and it is the opinion still held by the great majority of mining men with practical experience. Dr. Molengraaff's letter is dated Delft, November 27th, 1911. In it he states: 'I quite agree with you about the Far East. I also think that portion of the basin too shallow to give enough space for such thickness of the strata of the Witwatersrand system as would include the Main Reef. I also only expect Lower Witwatersrand beds there.'

"That is to say," continued Mr. Bleloch, "that the Van Ryn Reef and the Nigel, the pay reefs of the Far East Rand, are deposits whose geological position is in the Lower Witwatersrand beds and that therefore they are older and quite different deposits from those of the Main Reef series whose geological position is in the upper Witwatersrand beds."

With reference to the allusion to the two divisions in the Witwatersrand system, it may be placed on record that for convenience in description, the rocks of the Witwatersrand System are usually placed in two divisions—a Lower including all the beds up to the base of the Main Reef series, and an Upper embracing the beds from the base of the Main Reef series to the top of the Elsburg series.*

Dr. Molengraaff has been absent from South Africa for a good many years. We have missed his scientific bearing and thoughtful demeanour in the more recent debates that have centred around Witwatersrand problems. But Dr. Molengraaff must not be regarded as a geological back number, and the expression of opinion ascribed to him as above shows that Mr. Bleloch's voice has not quite been the voice of one crying in the wilderness, although the weight of authoritative opinion is against and not with him.

OTHER FLOTATIONS.

Mr. Bleloch seems, however, to have found that people who were prepared to support his doctrines with cash were less rare than sympathetic geologists. In 1916 he induced the Houtpoort, Ltd., a concern which was originally registered so long ago as 1903, to revive its interest in the Heidelberg area and to take over under option contract the farm

* Dr. Corstorphine's report on Platkoppie.

Goedverwachtij and Klippoortje. At later dates The Eastern Van Ryn and Modderfontein Gold Mines, Ltd., entered the arena, and to-day we find the Heidelberg Town Lands and the farms Tulipvale, Eendracht and Boschfontein involved in the controversy, whilst on these properties work which will be described in our next issue is being undertaken with a view to demonstrating the truth of the "two reef" theory. But activity has by no means stopped at this point. It has swept onwards over the Balfour area, and with this section too as well as with the line taken up by Mr. John Moffatt, of Heidelberg, on the basis of the identity of the Nigel and Van Ryn Reefs it will be our duty to deal.

DAGGAFONTEIN AND VARKENSFONTEIN ARE ABSORBED.

Meanwhile it should be recorded that in the early part of 1916 the Daggafontein Gold Mine passed into the control of the Consolidated Mines Selection Company, which had successfully developed the Brakpan and Springs properties and were thirsting for fresh conquests. Another important change in control took place a year later when the Consolidated Gold Fields of South Africa became interested in the Southern Van Ryn and assumed financial and technical control of that property. This latter action did not, however, imply that the technical advisers of that corporation endorsed Mr. Bleloch's view. On the contrary, it has recently been decided to sink a deep level shaft to intersect the "Nigel-Van Ryn-Main Reef Leader" in depth. Mr. Bleloch, speaking at the meeting held on January 31st last on this point, agreed to Mr. Leslie's programme only on his assurance that he had an open mind on the question of the Van Ryn and Nigel Reefs and that development will be done on the Van Ryn Reef when intersected in the shaft. The decision to sink a deep level shaft on the Southern Van Ryn has caused considerable disappointment to many shareholders who had been told that they had an outcrop proposition, and it has been the cause of reviving interest in the controversy. From the point of view of the economic exploitation of the Nigel Reef the location of this shaft is sound policy, but as against that it is contended that for the Southern Van Ryn, with its not excessive cash resources, a more sound project would be the immediate development of the reef which has been exposed at surface and on which a certain amount of preliminary development work has been carried out. It is again a question of the "two reef" theory as opposed to the declaration that there is one and one only payable reef section in this area, and we must leave a further consideration of this problem and a description of the work done with a view to establishing the truth of the second view until next week.

(To be continued.)

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SOUTH AFRICA AND KING COAL.—VI.

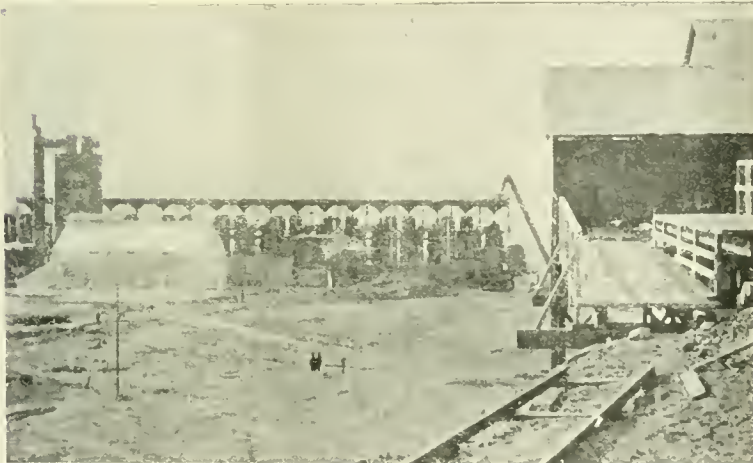
The Problem of the Low Grade Fuels—The Lynn Plant and what it is Doing—An Equipment of English Design.

THE problem of the profitable utilisation of low grade fuels is engaging ever-increasing attention in Europe, Asia and America, and it is quite certain that the day is approaching when the matter will be regarded from a serious standpoint in South Africa, with its enormous coal resources, a goodly portion of which must come under the low grade category.

THE ONLY SATISFACTORY SOLUTION.

Even to-day it has come to be recognised that no solution of this problem can be accepted as economically satisfactory unless it provides for the recovery of the by-products which have been so greatly wasted in the past and are being still lost at the great majority of South African collieries at the present time. We have already referred to the Mond and Coppée plants and their modifications, which are being introduced into this country, and it will be of interest to here devote some space to a plant of English design which is coming into use on an increasing scale both in England and abroad. In 1914-15 the Westmoreland Coal Company, of Philadelphia, instituted an investigation into the possibilities of profitably using waste dumps, and for this purpose commissioned their consulting engineer, Mr. L. A. Riley, to inspect and examine the plants already in operation in Europe. Mr. Riley recommended his clients to instal a demonstration unit of the Lynn system, and the results of a continuous test were most satisfactory. On a waste coal of a highly bituminous and also caking character, containing

once again with particular reference to the designs for the Lynn plant now being erected at the mines of the South Manchuria Railway Company, the gas from which will be used to fire the boilers of the turbo-generator plant. Air is delivered by a set of blowers and enters into the lower part (the air saturator) of the combined static air saturator and gas cooler, in which the air is brought into intimate contact with water made hot by the cooling of the gas in the upper part of the combined apparatus. From the air saturator, the air, after receiving a still further supply of steam, is passed into the superheaters, in which the air and steam mixture is superheated by means of the hot gas leaving the producer. The producer, which has a mechanical grate, is provided with a water seal, from which the ashes are discharged automatically without interfering in any way with the operation of the producers. Owing to the large amount of steam introduced with the air into the gas producers, the temperature in them is comparatively low. The ammonia formed in the gas producer, however (despite the comparatively cool temperature of the producer), would be dissociated were it not protected by that amount of the introduced steam which is not decomposed in the chemical reactions taking place in the producer. The hot gases leave the producer at the top and pass into the superheaters, where the air and steam blast, passing in the opposite direction, is superheated by abstracting sensible heat from the gases leaving the producer, thus partly cooling the gas and recovering a great amount of heat. Leaving the superheater, the gas passes into a gas main which collects the gas from all the other producers, and thence enters the vertical dust washer, in which the remaining dust, not already separated out in the superheater, is removed in a wet state by washing with water. From the dust washer the gas enters the static ammonia absorber, in which it is brought into intimate contact with an atomised solution of sulphate of ammonia containing a slight excess of sulphuric acid, which abstracts the ammonia. From the ammonia-absorbing apparatus, the gas passes into the vertical static gas cooler mentioned above, and thence into the final gas cooler, in which it is cooled and cleaned



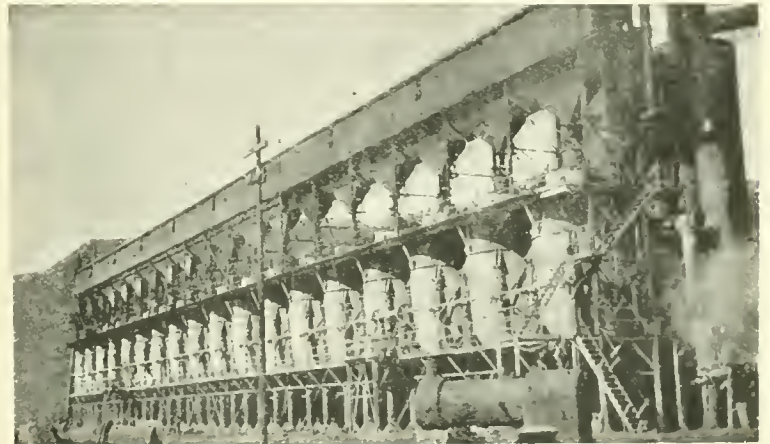
GENERAL VIEW OF THE BY-PRODUCT PLANT OF THE NATAL AMMONIUM, LTD.

35 per cent. of ash, the results per ton of waste coal were 110,000 to 112,000 cub. ft. of producer gas suitable for driving gas engines or firing furnaces, 60 lbs. of sulphate of ammonia and 120 lbs. of tar. As a consequence the company proceeded with the erection of a nine-producer plant.

THE LYNN PLANT DESCRIBED.

The plant at the Fushun mines of the South Manchuria Railway Company—a Japanese Government concern—will ultimately have a gasification capacity of 1,000 tons of fuel per diem of which the first half has been built on the Mond system. The further plant is being completed on the Lynn system. We now give some particulars of this plant, and for these particulars are indebted to the *Iron and Coal Trades Review*.

The novel features over older by-product producer plants consist in a mechanical grate and automatic ash discharge of special type, an improved type of superheater, and an ammonia-absorbing, gas-washing and cooling apparatus of the vertical static type, in which the momentum of the gas itself is used to bring about the atomisation of the liquid. This same system is used also in the air-saturating apparatus. The cycle of operations which, generally speaking, takes place in a by-product gas producer plant, is fairly well known to our technical readers to-day, but it may be as well to describe it



NATAL AMMONIUM PLANT: THE RETORTS.

by means of cold water, thus making it suitable for any ordinary industrial heating operation or boiler firing. If the gas made from a Lynn plant is used for producing power in gas engines, the gas is passed from the cooler through one or two centrifugal cleaners, where it is almost entirely freed from tar, and thence, after traversing a special water spray separator, passes through dry scrubbers filled with sawdust or wood shavings, in which the last traces of tar are removed. The circulating vessels and tar-separating tanks receive the water or liquor from the washers, whence it is continuously repumped to the washers. The concentrated sulphate liquor produced in the ammonia absorber is transferred to a vacuum-evaporating plant, in which it is further concentrated by boiling and the salt crystallised out. The salt is finally dried in hydro-extractors, from which it is conveyed to the sulphate store.

The Lynn plant is very compact, and the whole lay out is such as to require a minimum amount of labour and provide a good and quick access to every part. Having now described the cycle of operations in the Lynn system of plant, it remains to give a detailed description of each novel apparatus used. The Lynn Rambush gas producer (which is patented in all important countries) differs materially from the former types of mechanical-grate gas producers. It is used both as a hot gas producer for metallurgical and other furnaces and also for making producer gas with simultaneous recovery of by-products as in the present cases. It is, of course, suitably dimensioned for each purpose. In this producer the whole of the lower layers of the fuel and the whole of the ash zone are kept in a state of very gradual but constant movement, and it will be seen that the producer grate or air distributor has the shape of two vertical half cylinders laterally displaced along their dividing surface. The top of each half cylinder

has the shape of a half propeller or spiral, so that during each succeeding half revolution, a vertical propeller-like movement is imparted to the ash and fuel in addition to the eccentric movement caused by the two laterally-displaced half cylinders. As the air blast inlet is always receding from the ashes or fuel placed above it, it is always open and free. The small ash ploughs, of which a few are fixed at the bottom edge of the producer shell, remove the ashes constantly from several different points directly beneath the producer proper outwardly into the revolving ash trough, from which the ash shovel discharges them. It may possibly be thought that the two-stage ash removal is more complicated and requires more power than the single-stage, but on closer examination it will be seen that it is in reality a simplification, as the work is divided between the ploughs and the shovels, the ash ploughs moving the ashes from under the producer proper into the trough, leaving to the ash shovel the simple duty of finally discharging them. It has been found that by this means the fire in the producer burns much more evenly, and that fuels containing much ash can be handled continuously and successfully, which with the one-stage discharge have caused repeated breakdowns. The patented superheater consists of six vertical mild steel shells concentrically arranged in such a way as to form five annular spaces and one cylindrical space. The three narrow spaces serve as passages for the hot gas leaving the producers on its way to the washing plant. The gas enters the apparatus tangentially at at the top, and in this way a cyclonic motion is imparted to the gas, thus facilitating the removal of the dust in its dry state, with the consequent decrease in the troublesome labour of removing the dust in the washing plant. The gas is conducted downwards in the outer space, whence it enters the next annular gas passage nearer to the centre in which it is conducted upwards towards the top, where it again changes its direction and passes to the innermost gas passage, which, at the same time, serves as the outlet pipe for the gases. The air and steam blast passes through the narrow annular spaces in counter current direction to that of the gas, and as both the cylinders forming the air conduit are surrounded by the hot gas, an immediate superheating of the air and steam mixture takes place, while, at the same time, no heat losses to the outside can occur. It will be obvious from this construction that no parts of the apparatus are subject to extreme temperature differences, thus eliminating expansion troubles. Owing to the air conduit being placed concentrically one inside the other, the loss of heat to the outside is reduced to a minimum. Their design renders possible regular cleaning without stoppages and consequently a constant efficiency is maintained. The Lynn washers (patented in most industrial countries) are also

used for the cleaning and washing of other kinds of gases in addition to producer gas. Their design will be clear from the diagram, and it will be seen that the apparatus consists of a vertical cylindrical chamber containing a series of inverted truncated cones. Through the centre of the apparatus extends a shaft, to which is fixed a number of discs. The water entering at the top is distributed to the uppermost disc, from which it is driven by the gas on to the surrounding cone; thence to the next disc and next succeeding cone, and so on. The gas entering at the bottom passes up through the liquid sheets thus produced, and so is deprived, as the case may be, of ammonia, impurities, or heat. On closer inspection it will be seen that the diameter of the discs is much smaller than the lower diameter of the inverted truncated cones, and it might at first sight be thought that the water introduced at the top would flow over the edge of the uppermost disc and from there fall straight to the bottom, and this is *de facto* what would happen in case no gas was passing through the apparatus. During operation, however, the current of gas passes through the said sheets of water, and owing to the zig-zag path that it is forced to take, throws the water in the form of fine spray or mist alternately towards the centre and the periphery of the apparatus. It will thus be seen that in each washer the gas is washed many times, and that a most intimate contact will be caused between the gas and the washing liquid, while the distribution of the same and the washing of the gas itself is achieved with a very small power indeed. The use of packing or filling materials, such as coke, earthenware, tiles, or wooden boards, which baffle the passage of the gas is completely eliminated, thus avoiding the stoppages of plant and troublesome renewals due to such fillings getting choked up. These washers are made in sizes dealing with from 10,000 to 2,000,000 cub. ft. per hour in a single unit. The hot water from the gas cooler situated above the air saturator passes directly into the air saturator compartment, and thus it will be seen that practically no loss can occur in the transference of heat from the gas passing through the gas cooler to the air passing through the saturator on its way to the gas producers. In older types of plant the water used for saturating the air is passed through long lengths of piping and tanks, thus losing heat before entering the air-saturating apparatus. This combination avoids the duplication of settling tanks, pumps, and pipe systems, thus saving considerable space and capital outlay. It is rendered practicable by the special type of washer used, which enables a combined apparatus of modest dimensions to be constructed. The most important claims made for the Lynn system over older designs are that it is considerably cheaper in capital outlay, simpler to operate, and requires materially less ground space. No lead or other special metal is required. We understand that Lynn plants already in operation or being installed have a gasification capacity of about 500,000 tons of fuel (all kinds) per annum. One of the latest of these is at the works of the Hoffmann Manufacturing Co., Ltd., Chelmsford, and is now being duplicated. A large plant is also being installed by the Monongahela Valley Company, of West Virginia, U.S.A.



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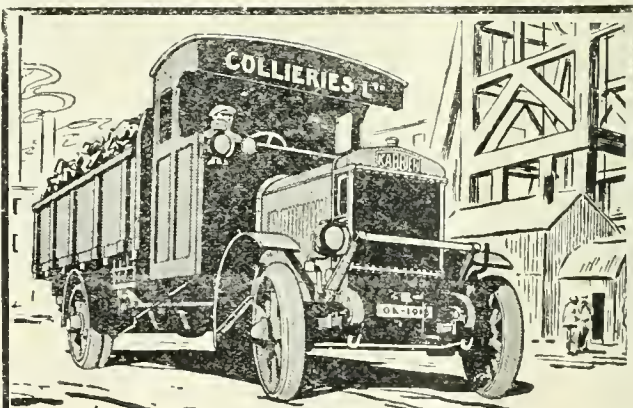
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PHTHISIS MEN AND RETURNED SOLDIERS AS PROSPECTORS.

Lessons in Elementary Mineralogy and Sampling—Important Scheme to Give Employment and Encourage Prospecting.

It is sometimes urged that some scheme should be initiated in South Africa to secure the twofold object of encouraging prospecting and giving healthy outdoor employment to returned soldiers and miners' phthisis sufferers. A useful example has been set in this direction by West Australia, and some particulars of the scheme may be of interest. It appears that as a result of a conference held recently in Perth to consider the best means of repatriating those miners and prospectors who have returned wounded and whose health is not good enough to go back underground to work in the mines, the following scheme was arranged jointly by the Mines Department of Western Australia and the Federal Repatriation Board. Application is first made by a party consisting of two or three men, who at the time of enlistment were miners or prospectors, to the Repatriation Board or its local committee. They have to satisfy the Board that they are medically fit to take up the work. They are then sent on to the Mines Department, and their reliability vouched for by one or two well known men. After this they receive tuition in the recognition and testing of the economic minerals, and are verbally examined as to their general knowledge of prospecting. This provision was made to give the scheme a much greater chance of being successful, and to ensure that practical men are sent out. In order to help the prospectors to retain the information supplied, a collection of twenty minerals specimens is supplied, together with a bottle of hydrochloric acid, diluted with 50 per cent. water, a zinc plate and metallic tin. A description of the minerals, with their characteristics and tests is supplied also. By this means the prospectors can, on the discovery of a mineral that he does not recognise, test whether it is one of commercial value or not. As this is, it is hoped, only the beginning of a big prospecting movement for the discovery of gold and other useful minerals, it was suggested that a brief summary of the lectures and tests should be published, so that the technical staff, especially the assayers on the mines, should be able to assist the prospectors by explanations and advice, in the recognition of the useful minerals. By so doing, the prospector would be taught the advantage of looking for scientific assistance to unearth gold lodes that do not outcrop, also base metals and useful minerals that have hitherto in many cases been passed by unrecognised. The following notes have been prepared to supply the most pressing needs of prospectors. It must, however, be understood that such tuition is not to turn out mineralogists in a week, but to serve as a guide to save men wasting time on minerals of no value; to recognise those that are, and having done so, develop such lodes or deposits, and send in samples for confirmation and assay to the Government. In the collection provided the minerals are placed in numbered bags, along with the descriptions, so that they can be identified; where practicable the specimens have the numbers painted on them. In the following description, the minerals are grouped according to their physical characteristics rather than by their composition.

Graphite.—The value of this mineral depends upon the size of the flake above 80 mesh and the percentage of carbon over 80 per cent. The feel is greasy, it will mark paper like a lead pencil and, when broken, the scales will float on water. Owing to impurities such as iron and mica (interleaved), the prospector when he discovers a graphite lode, which appears to him to be of the right quality, is advised to sink on it for a few feet, and then send samples for determination to the Government Mineralogist, Perth (Mr. E. S. Simpson). The samples are treated in the model plant in the laboratory, and a practical assay result can be obtained of the percentage of flake. A clean product of graphite is worth £25 per ton at Fremantle.

Molybdenite.—This mineral is also of a flaky type, and although it has a specific gravity of over 1, the flakes will float on water. The flakes are greasy and very soft, and can be scratched by the finger nail. The lustre is lead grey metallic, similar in colour to telluride, but the great difference in hardness can be noted. It will mark paper, like graphite, but leaves a bluer trace. Molybdenite occurs in quartz veins in granite, often merging into the latter, and is frequently very scattered and consequently of too low a grade to warrant mining. The prospector will want to bear this in mind, as although 85 per cent. concentrate is worth £425 per ton, an ore containing 5 per cent. of molybdenite appears to be much richer than it really is. At present the ore has to be hand picked and sent to the Eastern States for concentration by flotation. But it is possible that a plant for this treatment will be shortly erected here.

Micaceous Haematite occurs in fine, dark, shining scales or scaly masses, but which will not float on water. It has a red streak. Is soluble in hydrochloric acid, while graphite is not. Has no value.

Mica.—The value of this mineral depends upon the size and clearness of the sheets, which require to be not less than three by two inches. The value of good quality ore is sixpence per square inch per pound.

Scheelite.—A mineral valuable for its tungstic oxide content. Specific gravity 6, hardness $4\frac{1}{2}$. It varies in colour from whitish yellow to brown, occurs in crystals in quartz and micaceous granite. To test for tungstic oxide, grind enough of the ore to cover the point of a penknife and warm in a cup with hydrochloric acid, by holding in boiling water, or over a candle, when the tungstic oxide will become yellow, and on addition of metallic tin further warmed will become blue, and later on brown. This is the only yellow mineral that responds to this test.

Molybdi Ochre.—Is a lemon coloured mineral, which may be taken for tungstic oxide, but will not respond to the test for scheelite.

Baryte.—A heavy (specific gravity, 4 to 5) white to yellow or red mineral, is occasionally mistaken for scheelite, but like calcite will not respond to the test with hydrochloric acid. Easily scratched with a knife. When mixed with sodium carbonate and fused on charcoal and moistened with water on a silver coin leaves a black stain.

Cerussite, Crocoite and Pyromorphite.—The three ores of lead from white to yellow to green in colour, are heavy (6½), and remain as a tail in the dish when panning off, and are occasionally mistaken for gold. Can be reduced to metallic lead by fusing on charcoal with soda, and will not respond to the test for scheelite or bismuth.

Bismuth Carbonate.—Found frequently in association with scheelite, and when of high grade is worth about 8s. per lb. It is yellowish white to brown, sub-metallic, with a specific gravity of 7 and hardness varying from $1\frac{1}{2}$ to $3\frac{1}{2}$ according to the impurities. It is tested by holding in hydrochloric acid, when carbonic acid gas is liberated, and by immersing in water a white cloud in the water is obtained.

Wolfram.—A black, heavy mineral. Specific gravity (5) with hardness (7). Is recognised first by its fracture on two parallel sides with broken edges on the other four. But these faces are not quite flat, which can be noticed by the play of light and shade on them. The test is for tungstic oxide as in scheelite, but the sample must be ground finer, and the treatment continued for a longer period, as the solution of the mineral in the hydrochloric acid is much more difficult than scheelite. Is non-magnetic.

Tin Stone (Cassiterite).—This occurs in crystal form as lode tin in micaceous granite—as wash in decomposed granite formation or—as stream tin in creek beds. It is brown to black, with grey streak. Hardness 6 and specific gravity 7. It may be tested by breaking to about 1/16th inch, placing on a zinc tray, with the addition of 1 to 1 hydrochloric acid. After ebullition ceases, the tin oxide will be found to be coated with metallic tin. Nothing else will respond to this test.

Tantalite.—Another heavy black mineral, with hardness and specific gravity equal to cassiterite, but the streak is black instead of the grey streak of tin. It will not respond to the tests for tin or wolfram. Has no marketable value.

Ilmenite.—Titaniferous iron occurs as a black sand or in crystals, fairly heavy. Will not respond to the tin test, but is apt to be mistaken for wolfram in the test for scheelite, when after boiling with hydrochloric acid and adding metallic tin, it becomes violet instead of blue, but on further warming does not become brown.

Tourmaline and Manganese Oxide.—Both black minerals of lower specific gravity than wolfram or tin, and will not respond to the tests for those minerals. Tourmaline has no value and manganese ore requires to be very high grade to pay cost of transport. Manganese ore if treated with hydrochloric acid, forms a brown cloud.

Magnetite (Magnetic Iron).—A brown mineral, similar in appearance to cassiterite, but is magnetic. It is valueless.

Zinc Blende.—The black Jack of the Cornish miner. Is a grey to brownish black, sub-metallic mineral. Hardness (4), specific gravity (4). On being roasted gives off sulphur fumes, and oxidises, being yellow when hot, white when cold. It does not respond to the tests for tin and wolfram and has three distinct cleavages. It is frequently an indicator for lead. Readily soluble in hydrochloric acid, giving off hydrogen sulphide with characteristic odour of rotten eggs.

Galena.—The sulphide of lead is distinguished by its specific gravity (7½), metallic lustre, lead grey colour, greyish black streak, crystallisation and reduction with soda on charcoal to a malleable button, which will not respond to the bismuth test. Easily scratched by knife. Distinct cleavage.

Copper Ores.—These ores are so well known to prospectors that it is not necessary to give any tests. The main point being to sample the ore, which will be dealt with under the heading of sampling. Chalcopyrite, similar in appearance to pyrrhotite. Both yellow pyritic minerals, the latter (magnetic iron pyrites) can be eliminated with a magnet.

Asbestos Soft.—The value of this depends mainly upon the toughness of its fibre, and, secondly, on its length. The best test is by comparison for toughness with the sample supplied in the collection. Judging the value of asbestos is like wool classing; it has to be made by a specially trained expert. The prospector is advised that if he find an asbestos of tough fibre, to send samples to the Government Mineralogist for appraisalment. Samples of asbestos found in different localities in this State have been valued at from £25 up to £50 per ton.

Alunite.—Sulphate potash and alumina. Colour white, soft, friable to brittle, insoluble in hydrochloric acid, but on heating to a dull red gives off sulphurous fumes.

Jarosile.—Another potash earthly mineral, yellow to olive green; responds to the test of heating as in alunite. Found at Northampton near or in combination with graphite.

Magnesite.—Carbonate of magnesia. Colour white, hard, brittle. On treatment with hydrochloric acid when cold gives no action, but on heating with it, carbonic acid gas is evolved. Enquiries for a deposit handy to Perth.

Ore Sampling.—"The success of every mining enterprise depends on accurate knowledge of the constituents of the ore taken from the mine." (T. R. Woodbridge, U.S.A. Bureau of Mines.) This important side of prospecting is one that in the past has been too little understood, and in most cases imperfectly carried out. In many cases pros-

pectors guess at the value, from perhaps a grab sample taken from each bucket of ore hauled to the surface. This is broken down and panned off, daily or weekly. But more often a sample is broken out from the face, or picked from the dump from pieces of ore, which the prospector knows instinctively are the best. There are of course many men who systematically sample their ore, and can make a very good estimate of its value.

The following notes may be of assistance to the prospector as a guide so that he can secure the advantage of finding the value of his ore, by means of a sample fairly taken, and assayed by the Government Assayer or School of Mines. When the prospector finds a reef or lode, he judges by taking samples from various points whether it is of sufficient value to pay, and over what width the valuable contents are found. If the valuable portion of the lode is on the hanging or footwall, and the remainder of low grade, he will naturally eliminate as much as possible of the latter from his ore dump. But some at least will be there, and it is on the proportion of this poor ore that the prospector must ever keep a watchful eye, when estimating the average value of his ore dump. In this paper space does not permit of a detailed description of taking samples from the face, but the prospector should recognise the necessity of "not taking himself down," and when he does break out a sample, let it represent the average of what he can mine. Having decided on forming a dump, the ideal method is to lay out the space available, and bed the ore down over such space, so that the successive layers of the heap constitute a fair average. When the heap is ready for treatment it can be bagged, and such proportion out of each is set aside for a sample as may be decided upon. This sample, comprising, say, ten per cent., is broken to pass through inch mesh, mixed well out in a coned heap, which is then flattened and quartered. Half of this is broken down to half inch mesh, mixed and quartered again, and so on quartering and breaking until the final sample having been broken down to pass through a 10 mesh, or its equivalent made out of a flat tin (fish), with nail holes punched in it, can be divided into three samples of a pound each (milk tin). One to be sent in for assay, one for pan sampling, and the third put aside in case of accident. One of the soldier prospectors said that he always takes a quantity which he knows is a lb. in weight, pans it off and sends in the tail to the nearest State battery to be weighed; he can then calculate the value of his ore. (This applied to gold ore only.) If, however, this method is not suitable, and the ore is dumped in the usual way, the prospector can put one bucket, say, in every ten aside into another heap, and break and quarter it down as described before. It may seem to be waste of time to go to this trouble, but the prospector would find that it will, in the long run, pay him to estimate the value of his ore dump with accuracy, rather than to guess what it will yield. This is especially necessary where the ore has to be carted some distance, as by doing so, ore of an unpayable grade can be detected, and put aside. In dealing with base metal ores which are sold on assay value, the necessity for a thorough mixing of the lot is most obvious, and where the grade varies to any extent, the bagging of the ore as it is broken is one that opens up great chances of error. It has been necessary on occasions as a result of this latter having been done, to empty the whole of the bags, layer mix and quarter down, in order to obtain a fair sample of the lot, the owner having to pay for this extra labour entailed. If the prospector will follow out the above mentioned directions, and send his sample in to the Government, he can be in a position to know what grade of ore he has, and whether it will pay him to pick it cleaner, or perchance add some lower grade to it.

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This Journal is conducted in the interests of commercial and technical intercourse between Great Britain, her Allies and South Africa. Subject to the conditions of Peace, its pages will not be available for assisting the recovery of markets for German and Austrian goods.

THE GOLD STANDARD AND THE NEED OF GOLD.—II.

Points from the Report of the American Committee on the Gold Situation.

EXPANSION OF CREDITS

The following comment on the gold situation by Henry E. Cooper, Vice-President of the Equitable Trust Company, is of interest in regard to the expansion of credit in the world: "The tremendous expansion of industries and finances in the second half of the nineteenth century and during the first years of the twentieth century and the increasing exigencies of commercial transactions have required the introduction of additional media of exchange besides money. . . .

"It is interesting to mention here that the authorised fiduciary issue of the Bank of England was secured before the war as follows: £4,450,000 represented by the acquisition of the right of issue of other banks, lapsed since 1844, and secured on the general assets and on the estates of the shareholders of the provincial banks which have sold their right of issue to the Bank of England; £2,984,000 issued against securities (general assets and estates of shareholders) of the Bank of England, as authorised by the law of 1844 (7 and 8 Vict., Cap. 32); £11,015,100 outstanding debt of the Government to the Bank of England in 1884, which the Government authorised to be included as an asset of the issue department: total, £18,449,100. Additional notes beyond the sum of £18,449,100 could be issued against gold coin and gold and silver bullion.

"In France, there is nothing in the law requiring that the notes of the Bank of France, which has the monopoly of issue since 1848, be covered by a certain amount of gold. The Bank has no particular obligation to hold a metallic reserve against note issues. The maximum of issue is fixed by the Government and before the war amounted to 5,800,000,000 francs. The Bank can issue notes against cash or against statutory discounts or loans. In other words, every note of the Bank of France has its counterpart either in the metallic reserve or in the portfolio of discounts or in loans. In Germany the notes in circulation of the Reichsbank and of the other four banks of issue are secured by a fund, one-third their value, of gold coin and bullion, silver, copper, nickel and Government notes (Reichskassenscheine) and two-thirds of bills discounted. The notes of the Reichsbank are redeemable in gold, only as far as the provision of gold is sufficient at the time. The Bank of Austria-Hungary holds foreign bills as part of the cover for its note issues. As for our own country, it is to be remembered that, even before the introduction of federal reserve notes, all fiduciary money was not based on gold and that a distinction was made between gold and silver certificates. On the other hand, the sum total of public debts, which are considered to be deferred payments in gold, and are, therefore, another form of fiduciary notes, was constantly growing. The public debts of the United States, France, Great Britain and Russia, which amounted to about \$4,000,000,000 in 1844, had reached a total of nearly \$12,000,000,000 in 1874, and hovered around the \$13,500,000,000 mark in 1900. The public debts alone of all nations the world aggregated about \$44,000,000,000 in 1912.

"Since the beginning of the war . . . public debts have increased by leaps and bounds. A recent estimate shows that they had reached approximately \$110,000,000,000 for the principal Allies and \$57,000,000,000 for the Central Powers. If to that we add \$9,300,000,000, estimated total public debts of lesser nations, we will have an approximate general total of \$176,300,000,000 public debt for the world as against \$44,000,000,000 in 1912. And the increasing progression is far from having reached its maximum. Mr. Montgomery Bell, in the Journal of the American Bankers' Association of July, 1918, estimates that by April, 1919, and total war expenditures of Great Britain, United States and France will have reached about \$105,000,000,000."

Table 5 following gives approximate figures of the national wealth and present indebtedness of the principal countries of the world, as published recently in the Press by the Citizens National Bank:—

TABLE 5.

National wealth and present indebtedness of principal belligerents as compiled by Citizens' National Bank of New York (in millions).

	Wealth.	Present debt.	Per cent.
Japan	28,000	1,300	4.6
United States	250,000	15,000	6.0
Italy	25,000	7,000	28.0
France	65,000	23,000	35.4
Germany	80,000	31,000	38.7
Great Britain	90,000	36,675	40.7
*Russia	10,000	25,400	63.5
Austria-Hungary	25,000	20,000	80.0

*Russia's wealth seems under-estimated.

RATIO OF GOLD RESERVE TO LIABILITIES.

Since the war began, the demand for currency and for credit of all sorts has increased to such an extent that the ratio of gold reserves of the world has fallen far below what was formerly considered necessary for national solvency. The total fiduciary circulation of the nations of the world has not yet been exactly estimated. The Federal Reserve Board at Washington recently estimated that the principal banks of issue of Great Britain, France, Italy, Russia, Austria-Hungary and Germany had on December 1, 1917, nearly \$30,000,000,000 in circulation, as compared with about \$4,000,000,000 at the outbreak of the war. It is well to point out that since December, 1917, the circulation has further increased by billions and that the above figures do not include Treasury notes and other paper tenders now circulating all over the world. As for the ratio of gold and silver holdings to note and deposit liabilities of the principal banks of issue, the United States not included, the Federal Reserve Board has estimated that the close of 1917 it declined to an average of 7.6 per cent. in Great Britain, France, Italy, Russia, Japan, and Germany, and Austria-Hungary, as compared with an average of 45.6 per cent. at the outbreak of the war. Table 6 herewith gives the approximate amount of gold reserve in the principal countries of the world for different periods, and Table 7 gives comparative statements of leading banks of issue as compiled by the Federal Reserve Bank.

(To be continued.)

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INDUSTRIAL ASPECTS AND USES OF SOUTH AFRICAN ASBESTOS.*—I.

Important Review of the Possibilities of the Mineral in South Africa.

THE commercial value of asbestos depends on the combination of certain properties—satisfactory as regards number, kind, and degree—mainly physical, which are probably in part at least an expression of a chemical composition varying between fairly narrow limits for each variety.

The principal properties valued in the industry are:—Tensile strength, flexibility, fineness of fibre, incombustibility, length of fibre, acid and alkali resisting capacities, sea-water resisting capacity, elasticity, non-conductivity of heat or heat-insulation capacity, electric insulating power, and colour. The above order is approximately that of relative importance, though, in consequence of the many and increasing varieties of uses to which the fibre is now put, this order varies for different classes of manufactured articles: no doubt flexibility and tensile strength are of prime necessity for many articles, while length of fibre is of exceptional importance where yarn has first to be spun. In still other cases special stress is laid on acid and sea-water resisting properties or on heat-insulating capacity, *e.g.*, in the manufacture of flexible boiler covering and other uses in mercantile or naval marines, whereas colour is of less importance, provided other desiderata are satisfied. For these reasons not every fibre requires all the above properties to be present in the same degree for commercial purposes. Moreover, the different varieties show a good deal of variation in some of their characters, and this holds good even for an asbestos from one fibre area, *e.g.*, some amosite from the Lydenburg district is a good deal more elastic in some veins than in others, and in the Cape asbestos belt there is a noticeable difference in the fleeciness or perfection of fibrous structure between the Southern and Northern Sections; where colour is an essential factor, the deposits within the Union offer a fairly wide choice, while the recent developments of amosite show what a great range in fibre length is available in hornblende asbestos. Other things being equal, that variety will be the most valuable one which combines the greatest number of the most highly prized properties, each in the required degree. Given a fibre of suitable quality, many other industrial factors have to be considered in its profitable disposal in the world's markets; these include questions of labour supply, transport to railhead, shipping costs, etc., and last but not least, the more or less keen competition with other sources of supply. The discussion of these lies outside the scope of the present pages. During the last ten years or more the number of exploited asbestos occurrences has considerably increased, and several of these have an appreciable share in the world's output, though Canada, as the most important producer, still easily maintains its lead with something like 80 per cent., after which come Russia and the United States, but more recently Rhodesia has been developing an increasing output. Of the world's production during 1910 and 1911, the Cape accounted for only 1.2 per cent., but since that date the combined output for the Union has markedly increased, owing to the contributions from new fibre areas in the Transvaal. An accurate estimate of the outlook of this industry within the Union is specially difficult, if not impossible, on account of the peculiar shipping and other problems arising out of the world situation to-day; these are likely to continue for some time after the present upheaval. For many years chrysotile has held a leading position in the market, due to a combination of several fortunate factors. The persistence of extensive deposits has been proved in the Province of Quebec, and their exploitation has now been well established for a longer period; the improved methods of preparation for the market depend upon machinery for culling, sieving, drying, grading, etc., while its exceptionally high flexibility and infusibility have secured for it a firm hold in the industrial applications, in which

American manufactures have been specially to the front. Thus, Canada has come to be looked upon as the most reliable source of chrysotile, which can be trusted to furnish large and continuous supplies of well-graded fibre, to which manufacturers can adapt their machinery in accordance with the peculiar qualities of this asbestos. As regards acid and sea-water resisting capacity, tensile strength, elasticity, and fibre length, however, chrysotile is inferior to crocidolite or amosite. Up to the present the Union's share in the world's chrysotile output has been negligible.

Crocidolite.—The preceding remarks indicate that, before another variety of asbestos can be disposed of in the markets, manufacturers must be satisfied that this offers some special properties wanting in the fibre they have been accustomed to rely on, that continuous and large supplies can be drawn on, and, lastly, that the deliveries are being kept up to the standard of the sample. Crocidolite possesses several such properties, which render it superior to chrysotile for certain applications, *i.e.*, greater tensile strength and elasticity, superior heat and electrical insulating capacity, greater acid and sea-water resisting properties, and marked superiority in fibre length. It is often stated that chrysotile is the most valuable variety of asbestos, but it has to be remembered that, owing to the large and well-regulated output from the Canadian mines, as compared with the irregular and small output of crocidolite, the latter has never been an important factor in the asbestos markets, notwithstanding its superiority in the physical properties just referred to. Yet the price of 1 to 2 inch crocidolite stood at £70 per ton in the European market in 1913-14, a figure seldom reached by chrysotile. Had there been a production comparable in bulk and regularity to that of the Canadian fibre, amphibole asbestos would probably have been a much greater factor in the world's market. This remark also applies to amosite, the new iron amphibole of the Transvaal.

In the exploitation of crocidolite the Union of South Africa has a practical monopoly, since Western Australia so far only contributes a small quantity. The Cape Asbestos Co., established since 1893, has had a long uphill fight to obtain for crocidolite the recognition it deserves, and the keen competition in the world's market led to the establishment of their own factories in England, Hamburg, and Turin, with a sister company in France. They are the largest manufacturing concerns for articles derived from crocidolite, and the great bulk of the Cape blue output is absorbed by them, largely from their own mines, but also by purchase from other workings. Thus only a proportion of the combined yield from the Cape fibre has been able to compete in the open market.

While in the Southern Section of the Cape fibre belt the predominance of the mines directly under the Cape Asbestos Co., with their long experience in the exact requirements of their factories, has led to well-established principles of development, *e.g.*, methods and criteria of grading, the Northern Section round Daniels Kuil and Kuruman, where smaller companies and syndicates have more recently been opening up further deposits, is not always as advanced in the preparation of the fibre for the market. This result is due in part to the fact that the seams are, as a rule, not sufficiently persistent to admit of more systematic underground mining, so that the peculiarities of the contract system of labour have greater play, but it is also the case that the methods of grading are sometimes less thorough or less carefully applied; the danger thus arises that an order may not come up to the standard of the sample. This is to the detriment, not only of the producer concerned, but to the fibre area as a whole, a result specially deplorable in case of an industry in its youth, which has only recently begun to get a footing in the market.

* From Memoir of the Geological Survey.—A. L. Hall

THE FEBRUARY GOLD OUTPUT IN DETAIL.

Considerable Decrease—Native Labour Position Better—New Kleinfontein, Princess and Durban Deep Increases.

LAST month the Transvaal mines produced 636,728 ozs. of fine gold, valued at £2,704,647, being 39,331 ozs., value £167,671, less than the total for the longer month of January and 23,031 ozs., value £97,830, below the output for February, 1918. The native labour position continues to improve, the total number of natives at work at the end of last month being 172,359, as against 160,599 at the end of January, but many mines are still short of unskilled workers. For the Witwatersrand and the outside districts the official gold production figures are as follow:—

WITWATERSRAND.			
	Ozs.	Value.	
January	662,205	£2,812,867	
February	621,188	2,638,638	
Decrease	41,017	174,229	
OUTSIDE DISTRICTS.			
February	15,540	66,000	
January	13,851	58,851	
Increase	1,686	7,158	
GRAND TOTAL.			
January	676,059	2,871,718	
February	636,728	2,704,647	
Decrease	39,331	167,071	

STAMP POSITION.

The number of stamps in operation on the Transvaal goldfields last month was 8,259 compared with 8,281 in January, a decrease of 25. The official figures are:—

	Rand.	Outside.	Total.
February	7,971	285	8,259
January	8,034	250	8,284
Increase	—	35	—
Decrease	60	—	25

LABOUR FIGURES.

The native labour figures for the past three months are as follow:—

	December.	January.	February.
On gold mines	153,606	160,599	172,359
On coal mines	11,851	11,848	11,868
On diamond mines	3,180	3,539	1,264
	167,637	175,986	188,491

INDIVIDUAL RETURNS.

WITWATERSRAND.

	Value.	Increase.	Decrease.
	£	£	£
Aurora West	11,885	900	—
Bantjes Consolidated	4,447	38	—
Brakpan Mines	85,850	—	4,391
City and Suburban	24,437	—	4,328
City Deep	78,825	—	12,590
Consolidated Langlaagte	49,414	—	2,230
Consolidated Main Reef	67,199	—	1,168
Crown Mines	183,949	—	21,162
Durban Roodepoort Deep	37,563	2,655	—
E.R.P.M.	134,458	—	11,966
Ferreira Deep	49,690	—	12,331
Geduld Proprietary	60,046	—	3,356
Ginsberg	11,681	—	1,219
Geldenhuis Deep	50,514	—	5,454
Government Areas	179,658	—	8,686
Jupiter	24,310	—	3,598
Knight Central	28,557	1,180	—
Knights Deep	68,312	—	1,950
Langlaagte Estate	48,917	—	6,787

	Value.	Increase.	Decrease.
	£	£	£
Luipaardsvlei Estate	20,950	—	141
Meyer and Charlton	33,986	—	5,492
Modderfontein B.	115,691	—	12,061
Modderfontein Deep	83,128	—	5,760
New Goch	12,684	—	807
New Heriot	14,153	—	914
New Kleinfontein	64,120	6,351	—
New Modderfontein	168,843	—	1,338
New Primrose	15,317	—	1,028
New Unified	11,010	—	1,253
Nourse Mines	47,256	—	2,842
Princess Estate	21,913	1,515	—
Randfontein Central	153,190	77,000	—
Robinson	41,857	—	3,585
Robinson Deep	49,831	—	1,241
Roodepoort United	22,797	—	939
Rose Deep	55,751	811	—
Simmer and Jack	42,643	—	6,414
Sinuner Deep	42,622	—	5,513
Springs Mines	68,775	—	4,545
Van Ryn Estate	31,599	—	412
Van Ryn Deep	94,902	—	756
Village Deep	59,629	—	6,257
Village Main Reef	21,795	—	3,934
West Rand Consolidated	33,362	—	2,897
Witwatersrand	31,942	—	3,215
Wolhuter	33,625	—	2,167
Wit. Deep	32,928	—	2,872
Miscellaneous	10,505	—	5,117

OUTSIDE DISTRICTS.

Sub Nigel	24,399	—	1,750
Barrett	875	42	—
Glynn's Lydenburg	6,168	2,042	—
T.G.M.E.	18,771	4,316	—
Miscellaneous	15,796	2,508	—

GROUP PROFITS.

	December.	January.	February.
Central Mining	£237,879	£257,634	£223,885
Barnato	139,290	162,943	154,054
Gold Fields	9,316	5,828	6,654
General Mining	20,291	23,485	18,741
Mines Selection	56,639	61,161	54,447
Union Corporation	63,119	66,396	64,864
Totals	£526,834	£577,417	£522,645

Rooiberg Minerals.

The following are the results of the operations at the Rooiberg Minerals property for the month of February:— Tons treated, ore 1,232, slime 921; concentrates produced, 37 tons; expenditure, including realisation charges and exploration, £5,698; revenue, £4,724.

Witwatersrand Deep.

The following are the output results for February, which was the last month under the Rand Mines, Ltd., administration: Number of stamps running, 200; number of tube mills erected, 5; tons crushed, 27,300; yield in fine gold, 7,752 ozs.; estimated value, £32,506; estimated loss, £3,102; estimated working costs per ton, 26s. 1-0-1d.

New Kleinfontein.

Appended are details of the operations on the property of the New Kleinfontein for February: Stamps, 165; days, 25; tube mills, 8; tons milled, 53,500; gold recovered, 15,095 fine ozs.; net value, £63,158; profit, £713; working costs per ton (excluding development), £1 1s. 6d.; development to working costs per ton, 1s. 10d.; total working costs per ton, £1 3s. 4d.; capital expenditure, £1,680. Native labour position is now showing marked improvement

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MINE WORKERS' UNION AND UNDERGROUND OFFICIALS.

Abortive Four Days Strike at the Knight Central—Issue Undecided—Chamber of Mines Attitude Explained.

A FOUR-DAYS' strike occurred at the Knight Central this week, owing to a member of the Mine Workers' Union transferring to the Underground Officials' Association, on being promoted to the position of sampler. At a meeting on Wednesday night at Germiston it was announced that the trouble was over. Mr. G. S. Mare, shaft steward at the Knight Central, in a speech to the men, said they had decided to adopt the recommendations of the Executive and resume work on the Knight Central forthwith. He wanted the public, however, to understand that, although they had retreated, they were not defeated. The case which had prompted him to pull the men out had still to be fought. They were retreating, like an advance guard sometimes did, to take up a better position. The time would come when many things which were wrong in principle to-day would be righted; and when there would be no such thing as an Underground Officials' Association.

Mr. Forrester Brown remarked that the Chamber of Mines had taken up quite a different attitude from what it had adopted during the past two or three years; but there was no war now. The Chamber, he said, told the Union they must thresh out the difficulty for itself. Then there was the fact that the Knight Central mine was a poor paying proposition; and it was also a fact that negotiations had already taken place as to which mines would be closed down in the event of a strike. The Miners' Union was not prepared at this stage to accept the responsibility of mines closing down. There was a strike atmosphere on the Witwatersrand, and it would not take much to precipitate it. If the Knight Central men did not go back on Thursday they would have received 24 hours' notice. So the men would return to work, not forgetting the need of preparing themselves to fight against any injustice that might crop up.

ATTITUDE OF THE CHAMBER OF MINES.

The attitude of the Chamber of Mines is described in the following official statement issued during the week: Since the mining industry adopted the principle of the recognition and encouragement of the unions, the trades union movement has made great strides on the Rand, not only in membership but also in the increased numbers of unions. Nowadays, practically every class of mine employee has a union catering for it. In some cases more than one union caters for the same class of work; for example, there are two engine drivers' unions; some drill sharpeners are members of the Amalgamated Society of Engineers and others are members of the South African Mine Workers' Union; most of the reduction workers are members of the Reduction Workers' Association, but some are members of the South African Mine Workers' Union, and so on. No serious trouble had arisen in regard to the demarcation of the unions until last week, when the underground employees of the Knight Central Mine, members of the South African Mine Workers' Union, struck work because a sampler on that mine who, before his appointment as a sampler, was a member of the S.A. Mine Workers' Union, joined the Underground Officials' Association and resigned from the Mine Workers' Union, as has often happened in the past. According to statements in the Press, the S.A. Mine Workers' Union is inclined to refuse to allow any individual, once a member of that union, from resigning his membership and joining another union, even although his class of employment has changed. The dispute would seem to be one really between the two unions, but unfortunately the Chamber is brought into it through the action of the men on the Knight Central in striking, and it is therefore necessary for the Chamber to define its attitude in the matter. It may be pointed out that the Chamber has not accepted the position of compulsory union membership for mine employees, although it has given every assistance and

facility towards inducing employees to become members of the unions. So long, however, as an employee is a member of a union catering for the particular class of work on which he is engaged, the Chamber cannot countenance or assist any attempt to force him into another union. When more than one union caters for the same class of work, then in the view of the Chamber the employee should be at liberty to join which of the unions he prefers to join. The possible ultimate absorption of the whole of the employees of the mining industry in one mining industrial union has been referred to in connection with this dispute. It is clear that the formation of such an industrial union would require to be agreed to by the separate unions. So far, the Chamber is aware, no decision to so merge its identity has been come to by any of the unions.

Springs Mines February Results.

The following cable was despatched to the company's London office on March 7: "The yield for February was adversely affected by an undue quantity of low-grade ore being sent to the mill. This was occasioned by a large influx of new natives who were employed on tramming pending their being trained. The average yield of the present ore reserve is estimated to be between 38s. and 42s. per ton, dependent upon the proportions and grade of ore from development headings and other sources."

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TRANSVAAL CHAMBER OF MINES' ANNUAL REPORT.—I.

Official Review of Questions Dealt with During 1918.

THE report of the Executive Committee of the Transvaal Chamber of Mines for 1918 has the following, *inter alia*:—During the year the Chamber's constitution was altered to allow of the formation of a special collieries section of the Chamber, which has now been established, and includes practically all the important collieries of the Transvaal. On December 31st there were 84 ordinary members of the Chamber, viz.: Class I., 1; Class II., 13; Class III., 9; Class IV., 44; Special, 1; Collieries, 16. There were one associate and seven honorary members. During the year 14 ordinary members (including 11 collieries) joined the Chamber, and six withdrew from membership. In terms of the Chamber's amended constitution, an executive committee of seven, with Mr. Alex. Aiken as chairman, was elected by the colliery representatives, empowered to deal with matters relating to the coal mining industry.

NATIVE LABOUR.

The returns furnished by the Witwatersrand Native Labour Association, Ltd., show that the following native labourers were employed by members of the Association on the last day of December in each of the years 1917 and 1918. These figures include natives in the service of mine contractors, but exclude natives in the employ of members of the Association in the district of Barberton, as well as at the Cornelia and Coalbrook collieries, and collieries outside labour areas:—

	1917.			1918.	
	East			East	
	Coast.	Others.		Coast.	Others.
On gold mines	71,172	101,568		70,086	82,520
On coal mines	10,472	1,223		10,340	1,511
On diamond mines	165	4,428		183	2,997
On tin mines	65	563		42	509
	81,874	107,782		80,651	87,537

Dr. Lister's Vaccine.—In view of the marked reduction in the incidence of pneumonia amongst mine natives following inoculation with Dr. Lister's anti-pneumococcal vaccine, the board of management of the Witwatersrand Native Labour Association, Ltd., recommended to its members that all natives when engaged for work shall be inoculated with the vaccine. Owing to the influenza epidemic, it has been impossible to give full effect to this recommendation for the time being.

Tropical Natives.—During the 1918 session of Parliament, the Government agreed as an experiment to the introduction of 1,000 natives from north of latitude 22°S. for work in the gold mines, after being inoculated with Dr. Lister's vaccine. The proposal, however, was ultimately rejected by Parliament.

Jack Hammer Drills.—The acute shortage of native labour during the year resulted in an extension of the use of Jack Hammer drills, and in order to co-ordinate the information in regard thereto a sub-committee of the Chamber was appointed, with an official having special experience in the use of these drills, to advise it.

Sterkstroom Disinfecting Station.—Under an agreement between the Government and the Chamber, a station was established at Sterkstroom, in the Transkei, for the disinfecting of natives from that district, more especially in view of the serious outbreak of typhus fever in Cape Colony. It was also arranged that natives passing through Sterkstroom on their way to the Witwatersrand should be medically examined at the station as regards their fitness for mine work. The administration of the station was placed in the hands of the Native Recruiting Corporation, Limited. At the end of the year the Government notified its intention of withdrawing from the arrangement, owing to the disappearance of typhus from the district.

Native Unrest.—In July the Government appointed a Commissioner to inquire into the unrest amongst the natives in the service of the Johannesburg Municipality, and also the complaints by natives on the mines in regard to the prices charged them by Reef traders. The President gave evidence before the Commission on behalf of the Chamber. The Commissioner in his report commented favourably on the conditions of natives on the mines.

Standing Committee on Dust Sampling.—During the year, 36,621 dust samples were dealt with by the Chamber's dust sampling department, as compared with 22,602 in 1917. Six dust sampling surveys were carried out by the dust sampling staff during the year, the average dust content per cubic metre of air being as follows: 17th survey, 4.0 milligrams; 18th survey, 3.0 milligrams; 19th survey, 3.0 milligrams; 20th survey, 2.6 milligrams; 21st survey, 2.7 milligrams; 22nd survey, 2.6 milligrams; for the year 1918, 2.9 milligrams. These results, in the opinion of the Executive Committee, indicate a steady improvement in the dust conditions on the mines. In addition to its dust sampling duties, the department undertook the analyses of a large number of samples of water and air, and also carried out many experiments, including various tests with the "Konimeter." The department has begun to take samples of mine air during night shift.

Miners' Phthisis Prevention Committee.—At the end of the year the Miners' Phthisis Prevention Committee had completed an elaborate report on the dust conditions on the mines, containing a number of recommendations following upon the investigations of the Committee. In regard to one of these recommendations, which proposes to fix a standard for mine air based on "Konimeter" samples only, a minority report signed by the representatives on the Committee—nine out of 19 members—is presented. A pamphlet, prepared by the Committee, has been printed by the Chamber and distributed. The pamphlet contains extracts from the Mines and Works Regulations relative to the duties of dust officials on the gold mines.

Transvaal Miners' Phthisis Sanatorium.—The opening of the new sanatorium at the Wedge Farm, for silicotic sufferers only, has proved successful, 25 patients being in residence there at the end of the year, the number at Springkell being 38. The work of both institutions has proceeded smoothly throughout the year. The Executive Committee agreed to a suggestion that 10 beds should be reserved at Springkell Sanatorium for purely tubercular patients who have not necessarily been employed on the mines. The Provincial Administration, however, which jointly with the Chamber controls the institution, found itself unable to agree to this suggestion on the ground of the expense.

Silicotic Employment Office.—The Silicotic Employment Office, established by the Chamber under the aegis of the Association of Mine Managers, has found work for 704 men suffering from silicosis, from its inception in October, 1916, to December 31st, 1918.

(To be continued.)

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THE YEAR WITH THE UNION CORPORATION GROUP.

Increased Ore Reserves at the Modder Deep and Geduld—Scheme to Open Up Southern Portion of Geduld—Princess Losses Due to War Conditions.

Mr. P. M. Anderson, consulting engineer of the Modder Deep, in his report for the year ended 31st December, 1918, writes: "No expenditure was charged to capital account; all expenditure, including additions to machinery and plant, as well as buildings, was charged to working costs. The battery ran 98 per cent. of the possible time, and crushed 23.7 tons per stamp per day. The total tonnage milled was 506,100 tons, being an increase of 11,700 tons as compared with the year 1917. The gold recovered equalled 40s. 11d. per ton, the working costs were 17s. 5d. per ton, and the profit was 23s. 6d. per ton. These figures show increases of 1s. 11d., 1s. 2d. and 9d. per ton milled respectively. The gross profit, including sundry revenue, was £602,876, or £33,575 more than for the previous year. The cost of mining supplies and the rate of European wages were further advanced during the year, and affected working costs to the extent of 1s. per ton milled, bringing the total additional cost due to war conditions to 3s. 2d. per ton milled. The stock of ore on the surface dump stood, at the end of the year, at 39,395 tons from stopes and 146,000 tons from development, 474 tons only having been drawn from the former during the year. The supply of native labour has been sufficient to meet the requirements of the mine except during the last quarter, when recruiting was disorganised owing to the influenza epidemic. The death rate from sickness was 15.6 per thousand, and from accidents 0.9 per thousand. The higher rate from sickness is largely due to 19 deaths from influenza. The development work done during the year amounted to 5,425 feet. The reduction of 761 feet as compared with last year is due to the shortage of nitro-glycerine explosives early in the year. The developed ore reserves, as measured and valued at 31st December, amounted to 3,450,000 tons, having an assay value of 8.8 dwts. over an estimated stoping width of 78 inches. The tonnage is greater by 130,000 tons, and the value shows an improvement of .1 dwt. compared with the figures of a year ago."

GEDULD.

Mr. P. M. Anderson, the consulting engineer of the Geduld Proprietary Mines, in his report for the year ended 31st December, 1918, writes: "Since the 23rd of January, when the renovation of the old portion of the stamp battery was completed, the whole plant has run very satisfactorily. The tonnage milled during the year was 513,200 tons, being an increase of 87,650 tons compared with the year 1917, and 190,220 tons compared with the year 1916. The yield from gold was 29s. 2d. per ton, the working costs 20s. per ton, and the working profit 9s. 2d. per ton. These figures show a reduction of 6d., an increase of 4d., and a decrease of 10d. per ton respectively as compared with the preceding year. The total profit from gold was £234,242, being an increase of £21,401 for the year. The addition of sundry revenue amounting to £10,443 brings the total profit to £244,685. The rate of wages to European employees and the cost of mining supplies were further advanced during the year to the extent of 1s. 3d. per ton. By the end of the year the total burden of cost directly due to conditions brought about by the war was 3s. 11d. per ton milled. The quantity of water raised from the mine for the year was 575 million gallons, or 183 million gallons less than in 1917. This reduction is due to the successful closing off of certain flows of water by the injection of cement under high pressure into the fissures. All expense in connection with this work, amounting to £12,500, was charged to working costs. The supply of native labour was sufficient to meet the requirements of the mine except during the last quarter of the year, when recruiting was dislocated owing to the influenza epidemic. The death-rate from sickness was 21

per thousand and from accidents .6 per thousand. The higher rate from sickness was due to 33 deaths from influenza. The progress made in the sinking of the intermediate and No. 3 incline shafts into the southern area was 2,233 feet and 1,129 feet respectively. Sinking in the latter has been stopped as it has reached a sufficient depth to permit of a connection being driven to the position of a new vertical shaft which is to be sunk to serve the southern portion of the property. The total footage of development, inclusive of inclines, was 17,313 feet, or 3,891 feet less than in the previous year. The developed ore reserves, as measured and valued at the 31st December, 1918, amounted to 2,510,009 tons, having an assay value of 7.5 dwts. over a stoping width of 61 inches. This is an increase of 310,000 tons, the width and value remaining unchanged. The development account stands in the books at £189,962, equal to 1s. 6.2d. per ton of ore developed; 2s. 9d. per ton milled was charged to working costs for development redemption. The capital expenditure for the year amounted to £83,730, of which £58,386 was spent on underground work. The former figure includes £7,858 expended on machinery for the new shaft."

PRINCESS.

Mr. P. M. Anderson, the consulting engineer of the Princess Estate and G.M. Co., Ltd., in his report for the year ended 31st December, 1918, writes: "The tonnage milled was 222,430 tons, or 39,170 less than in 1917, and 54,470 less than in 1916. The yield from gold equalled 26s. 1d. per ton, and the working costs were 29s. per ton, showing increases of 6d. and 4s. per ton milled respectively compared with the preceding year. The working loss, after allowing for sundry revenue and the difference between the amount charged to working costs for development redemption and the amount spent on development, was £28,715. These results as to costs and loss are worse than anticipated and are attributable to (1) the excessive rainfall at the beginning of the year which destroyed two of the company's dams and flooded portions of the mine; (2) a further increase of 1s. per ton, due to higher rate of wages and cost of mining supplies; (3) the disorganisation and loss of the labour force in the last quarter of the year due to the influenza epidemic. Working costs are now affected to the extent of about 3s. 6d. per ton due to the conditions brought about by the war. The development footage of 4,622 feet was 2,214 feet less than for the preceding year, as little development was possible in the South Reef at No. 1 shaft until the reorganisation of hoisting arrangements was completed. The ore reserves as measured and valued at 31st December were: South Reef, 188,000 tons, having an assay value of 7.5 dwts. over a milling width of 28 inches; Main Reef, 192,000 tons, having an assay value of 6.8 dwts. over a milling width of 51 inches; total, 380,000 tons, having an assay value of 7.2 dwts. over a milling width of 37 inches. The tonnage shows a decrease of 123,000 tons, while the width is greater by 2.4 inches and the value greater by 0.1 dwt. In addition there are 40,000 tons valued at 7.7 dwts. over a milling width of 26 inches which must be left to protect shafts. The capital expenditure for the year amounted to £38,753, of which £31,829 was spent on the shaft and £6,924 on equipment. At the end of the year there was unexpended on votes £9,700. The reorganisation of the hoisting equipment at No. 1 shaft has been completed, though owing to the flooding of the mine the incline portion has been sunk to the 14th level only, instead of to the 15th level as expected. The native labour position has, since the close of the year, improved very materially and is now practically normal. The mine is therefore in a position to supply average grade ore to the full capacity of the mill. The profits to be earned will depend to a great extent on the proportion of saving that can be effected in the 3s. 6d. war costs now that hostilities have ceased."

PREMIER D.M. CO: GENERAL MANAGER'S REPORT.

Reviewing the Year—Working Cost, Development and Labour Questions.

In his report for the financial year ended 31st October, 1918, the General Manager, Mr. D. McHardy, writes:—The total number of loads of 16 cubic feet hauled from the mine was 1,955,568, accounted for as follows: Blue ground from 260 ft. level—washed, 526,898; blue ground from 310 ft. level—washed, 948,663; blue ground from 360 ft. level—washed, 2,745,682; blue ground from 410 ft. level—washed, 584,608; total, 4,805,551; stone and reef discarded, 149,717; total, 4,955,568. The total production of diamonds was 851,573 carats; average yield per load, 177 carat; average cost per load mined and washed, 2s. 1-238d.;* average cost per carat, 11s. 10-432d.;* average cost per load on total loads hauled, 2s. 0-476d.* The reduction in the quantity of blue ground washed in comparison with the previous year is due to the loss of time occasioned by the exceptionally heavy and continuous rains which fell during the first half of the period under review, whilst the outbreak of Spanish influenza towards the close of the year, resulting in the temporary incapacitation of practically half the labour force, had a retarding influence on operations generally. Taken in conjunction with the shortage above referred to, the slight falling off in the average yield also tended to diminish the output, which discloses a decrease of 54,768 carats compared with the total recovery for the year ended 31st October, 1917. The average cost per load mined and washed was 2s. 1-238d., being 182d. in excess of the figure for the preceding year. The slight difference calls for no comment, however, in view of the further substantial advance in the prices of all mining supplies. As an instance of this, it may be mentioned that the extra charges made for explosives and fuel during the past year, alone imposed an additional burden on the mining expenses, to the extent of nearly one halfpenny per load. Moreover, the general increase in wages, to meet the demands of the various Industrial Unions, extra war allowances to the dependents of men on active service, estate charges in connection with the maintenance of buildings, etc., are factors which have added appreciably to the working costs. The No. 4 gear remained closed down, and, as circumstances permitted, the improvements sanctioned by the board were proceeded with, though the scarcity of material prevented any marked progress being made in the direction contemplated. The whole of the ground crushed and washed has, therefore, been dealt with by the No. 3 gear, and the company has been fortunate in being able to import the spare parts necessary to maintain this plant in satisfactory working order. To provide further facilities for the disposal of tailings, it became necessary during the year to extent and re-arrange the main and auxiliary haulages in use for that purpose. The development of the 410 ft. level has been completed, and the blue ground available above that level represents 37,000,000 loads, being considerably in excess of the quantity developed at the close of any previous financial year. The introduction of certain modifications in regard to the method of developing the mine enabled this work to be accomplished with a reduced labour force and at a lower cost than formerly. The mine has now attained an average depth of 262 feet, an increase of 13 feet compared with the depth recorded at the close of the previous year. The restrictions imposed by the Government to control the consumption of explosives rendered it impossible to undertake the removal of the floating reef on as large a scale as might otherwise have been the case. Nevertheless, 149,717 loads of waste rock were hauled from the mine and disposed of, being approximately 2,000 loads less than the quantity handled during the previous year. All the floating reef encountered in the working faces has been removed in the ordinary course of mining, and, with the exception of the

"bar" through the centre of the mine, the present levels have been entirely cleared of intrusive matter. The normal inflow to the reservoir at the Wilge River Pumping Station was largely augmented by the very heavy rainfall during the past season, and a considerable volume of water has been continuously discharged over the concrete weir. The quantity of water which entered the reservoir amounted to 7,885,000,000 gallons, whilst 358,500,000 gallons were pumped for mining and domestic purposes. The rainfall was 42-34 inches, compared with 35-04 inches for the previous twelve months. Operations have, heretofore, been carried out on two shifts each of 10½ hours duration, and on this basis the supply of native labour has, on the whole, been sufficient for requirements, but with a view to improving the conditions of employment, the board decided, in May last, to curtail the working hours by introducing an eight hours' shift throughout the mine and works. I regret, however, that it has not yet been possible to bring about this change, for the reason that, despite the most strenuous efforts made to secure the additional labour necessary for that purpose, the results have been disappointing, and at the close of the financial year the strength available was considerably below the complement required to inaugurate the third shift. Although unusually large numbers of natives were found at their homes, the abnormal prosperity prevailing in the territories exploited by the company, as well as the considerable amount of cash in circulation on account of the payments made to natives who had returned from overseas, enabled them to meet all their obligations in regard to taxation without having recourse to work on the mines. The number of natives admitted to the compound was 8,737, and in this connection recruiting charges amounted to £8,025 9s., equal to 18s. 4-45d. per head. The daily average number of natives employed was 1,912. Wages amounted to £228,917 6s. 11d., being a daily average of 3s. 2-862d. per native per day, including piece-work and overtime, natives providing their own food. For the eleven months ended 30th September, 1918, the health of the natives was highly satisfactory, but, unfortunately, the outbreak of Spanish influenza on the 2nd October spoilt the results which otherwise promised to surpass the exceptionally low death rate recorded for the previous year. The total death rate from disease was 11-05 per 1,000 per annum, of which the influenza epidemic accounted for a mortality of 10-59, the death rate from all other diseases for the whole year being only 3-46 per 1,000 per annum. Altogether 2,588 natives contracted influenza and there were 52 deaths, equivalent to 1 per cent. of the daily average compound strength during the currency of the epidemic. The comparatively mild form which characterised the spread of the epidemic amongst the native employees is attributed to the inoculation with Dr. F. Spencer Lister's pneumococcal vaccine, which has been vigorously continued, and which, in the opinion of the company's medical officer, prevented complications, especially in regard to pneumonia, supervening. In this connection it is worthy of note that of the 52 deaths which occurred, due to the influenza, 35 were confined to new arrivals who entered the service of the company during the course of the epidemic, and who contracted the disease almost immediately after admission to the compound, before they were fully inoculated in accordance with the methods prescribed. The daily average number of white men employed, including apprentices, was 492, and the wages paid amounted to £153,831 5s., an increase of £20,079 13s. 7d. compared with the expenditure under this heading for the previous year. Employees continue to enjoy the benefit derived from the free occupation of the company's dwelling houses, and some idea of the value of this concession may be formed from the fact that, in pre-war times, the revenue which accrued from the rental of these properties amounted to approximately £10,800 per annum.

* Calculated on mine expenditure only, viz., £505,379 8s. 4d.

THE WEEK IN THE SHAREMARKET.

Fall of Springs -The Market Shaken -Springs Recover.

The market started to recover immediately after the call on Friday week, and maintained itself to the close. There was no falling away on Saturday morning, and though prices have by no means as yet reached their former level, they seem on their way to so doing, unless another unforeseen check or scare should arise and cause another setback. At the opening on Monday the first sale of Springs was made at 55s. 6d. and the last at 54s. The call was a reflection of the uneasy feeling caused by the continued labour agitation. Nearly all the gains of Saturday were swept away. Springs were received with a groan, which was apparently justified when they finished at 53s. During the afternoon they regained another shilling. Prices steadied somewhat at Tuesday's call after the shaking up they received on the previous day, thanks to the downfall of Springs. The delinquents hardened to 54s. 3d., and after lunch rose to 55s. 6d. The whole market improved at the same time. At Wednesday's opening Springs were in active demand and recovered to 57s. 3d., making 3d. more at the call, but subsequently losing a shilling of their temporary gain. Government Areas and Geduld Props. were both firmer. Springs soon regained their lost ground and finished at 59s. The market closed firm. On Thursday morning Springs were again active, but at a slightly lower level than at the close overnight, most of the sales being booked at 58s. 3d. The call was dull, only eleven sales being recorded, one of which was in New Jagersfontein at £5. The Modder stocks were firm, as also Government Areas, Geduld Props. and Van Ryn Deep. Sub Nigels were easier. The outside business has been limited practically to Makganyenes and South-Westerns. The former were sold at 43s. and the latter ranged between 87s. 6d. and 80s. until the news came in on Friday morning of the dredger having been sunk, when they came 60s. sellers. The only buying bid was 40s. for an odd lot. Besides the above there were sales of Sakalivas in odd lots at 4s. 6d. and 4s.; Monteles at 10s., and New Farms at 1s. 10d. Lydenburg Lands were quoted at 2s.—2s. 3d. There were sellers of Union Tins at 4s. 6d. and buyers of Henderson's Estates at 5s. and of the Options at 10d.

The market was active on Thursday afternoon and closed strong. At the opening on Friday Springs were in demand and made 59s. 6d. Modder East were also wanted touching 20s. 3d. and finishing at 19s. 9d. At the call the following alterations were recorded:—Sales: African Farms, 15s.; Consolidated Langlaagtes, 17s.; Main Reefs, 11s.; East Rands, 5s. 6d.; Geduld Options, 13s.; Knight Centrals, 6s. 3d. and 6s. 2d.; Lace Props, 21s. 6d.; Modder Bs., £8 1s. 3d.; Modder Easts, 19s. 9d.; Nigel, 5s. 6d.; Pretoria Cements, 64s.; Princess, 3s. 2d.; Rooibergs, 5s. 6d.; Springs, 59s. 6d. and 59s. 3d.; Alkalis, 81s.; Van Ryn Deeps, 67s.; West Springs, 23s. 9d.; Wit. Deeps, 11s. 11s. 3d. and 11s. 6d.; Zaaiplaats, 12s. 9d. Buyers and sellers: Anglo-Americans, 24s. 9d.—29s.; City Deeps, 52s. 3d.—53s. 6d.; Crown Diamonds, 13s., buyer; Dagga Options, 4s., seller; Glynn's Lydenburgs, 21s. 9d.—21s.; Geduld Props, 46s.—46s. 3d.; Government Areas, 93s. 9d.—94s. 3d.; Jupiters, 4s. 6d.—4s. 8d.; Leeuwpoots, 24s. 6d., buyer; Modder Deeps, £7 6s.—£7 7s.; New Elands, 26s. 6d.—28s.; New Eras, 9s. 3d.—9s. 6d.; Kleinfonteins, 11s. 9d.—12s.; Randfonteins, 14s., buyer; Rand Selections, 75s. 6d.—77s. 6d.; Southern Van Ryns, 9s., buyer; Sub Nigel, 22s. 3d.—22s. 6d.; 10s. paid, 12s.—12s. 6d. In the outside stocks there were sales of Makganyenes at 46s. and Monteles at 13s. On the previous day South-Westerns, after sales of an odd lot at 50s., recovered to 72s. 6d.—75s. Modder East Options have been adversely affected by the new debenture scheme and remained stationary at last prices, notwithstanding the advance in the present stock.

	Fri. 7th.	Sat. 8th.	Mon. 10th.	Tues. 11th.	Wed. 12th.	Thurs. 13th.
African Farms ...	13 6*	13 9*	13 10*	13 9*	14 0*	14 3*
Anglo-Amer. Corp. ...	—	23 0*	—	—	22 6*	21 3*
Apex Mines ...	6 6*	7 0	6 6*	—	—	6 6*
Bantjes Cons. ...	1 9*	1 9*	1 10*	1 9*	1 9*	1 10*
Brakpan Mines ...	62 6†	60 0*	62 0†	59 0*	62 6†	60 0*
Bushveld Tins ...	0 6*	0 6*	—	0 9†	—	0 7*
Cinderella Cons. ...	3 6*	3 6*	3 6	3 3*	3 6	3 6*
City & Subs. ...	6 3*	6 3*	6 9*	6 9	6 9*	6 3*
City Deeps ...	—	51 6*	51 6*	51 6*	51 0*	52 0*
Clydesdale Colls. ...	23 6*	23 6*	23 0*	23 6*	24 0†	22 6*
Con. Investment ...	—	—	23 0*	22 6*	24 0*	21 0*
Con. Langlaagtes ...	18 6†	—	17 0	17 0*	16 6*	16 6*
Con. Main Reef ...	10 6*	10 3*	10 6*	11 0*	10 6	10 6
Con. Mines & Deeps ...	—	24 9*	24 0*	24 0*	24 0*	24 0*
Coronation Freeholds ...	1 1*	1 1*	1 1	1 2*	1 1*	1 1*
Crown Diamonds ...	12 0*	12 3	12 0	12 0*	12 6	12 0*
Daggafontein Mines ...	22 6*	24 9	23 3*	—	24 3*	24 0
Do. options ...	—	1 0*	—	—	4 3*	4 6†
Durban Road Dps. ...	—	—	8 0*	—	8 0*	8 0*
East Rand Coals ...	2 1*	2 3	2 2*	2 2*	2 2*	2 3†
East Rand Deeps ...	0 9*	0 9*	—	1 0†	0 10*	0 9*
E.R. Mines ...	18 3†	—	17 0*	18 6†	17 6*	18 0†
East Rand Props ...	5 6*	5 6*	5 0*	5 6*	5 0	5 0*
Eastern Golds ...	—	1 3*	1 5†	1 4*	1 5†	1 6†
Frank Smith's Diam. ...	3 8*	3 6*	3 8	3 6*	3 6*	3 7*
Geduld Props. ...	43 6*	45 9	44 3*	44 9	45 6	45 9
Glynn's Lydenburgs ...	21 0*	21 9*	—	—	21 0*	21 0*
Govt. Areas ...	91 0	92 6	90 6	90 6*	91 9	92 0*
Jhb. B.I. of Executors ...	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters ...	4 6*	4 6*	4 3*	4 6*	4 3*	4 3*
Klerksdorp Props. ...	—	1 1*	—	1 3	1 1*	1 1*
Knight Central ...	5 7	5 8*	5 6	5 6*	5 5*	5 8
Lace Props. ...	20 6	20 9*	20 6	20 3*	20 6	20 9*
Leeuwpoot Tins ...	21 9	21 9*	22 6	21 9*	22 6	23 0*
Lydenburg Farms ...	8 5*	8 6*	8 1*	8 5*	8 6*	8 5*
Middlelei Est. ...	1 0*	—	1 0*	1 0*	1 0*	1 0*
Modder B's. ...	153 0	156 6*	155 0*	153 9*	155 0*	157 6*
Modder Deep ...	140 0*	145 0	145 6	141 9*	144 0	144 0*
Modder Easts ...	18 0	18 9	18 3	18 3	18 6	18 9
Do. Options (3 yrs.) ...	4 4*	4 9	4 4*	4 7	4 6	4 3*
Do. Options (4 yrs.) ...	5 5	5 11	5 5*	5 7	5 9	5 6*
Hume Pipes ...	27 6*	27 6*	27 0*	27 6*	27 6*	27 6*
Natal Navig. Col. ...	—	21 0*	21 0*	21 0*	22 3†	21 0*
National Banks ...	—	—	£15*	—	£14 15†	£15*
New Boksburgs ...	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
New Elaad Diam. ...	24 0*	25 0*	24 6*	24 6*	25 0*	25 6*
New Era Cons. ...	9 8†	9 6	8 6*	9†	8 6*	9 0
New Geduld Deeps ...	5 8*	5 9*	5 9*	5 8*	—	5 10*
New Heriots ...	11 6*	10 0*	10 9*	10 6*	11 0*	11 0*
New Kleinfonteins ...	11 9	12 0	11 3*	11 6	11 3*	11 0*
New Modderfonteins ...	£25 10*	£25 15*	£25 10*	£25 11 3*	£25 17 6	£25 10*
New Unified ...	3 6*	3 6*	3 6*	—	—	—
Nigels ...	4 0*	4 0*	5 0*	4 0*	5 0*	5 0*
Nourse Mines ...	13 0	12 6*	14 0*	13 6*	13 6*	13 6*
Premier Pref. ...	160 0†	—	150 0*	150 0*	—	150 0*
Pretoria Cements ...	60 0*	62 6*	62 6	62 3*	62 6	63 0*
Princess Estates ...	2 10*	3 1	3 1†	3 3†	2 9*	3 0*
Rand Collieries ...	3 9†	3 9†	3 1†	3 9†	3 7†	3 9†
Rand Nigels ...	1 9†	1 9†	—	1 9†	—	1 9†
Rand Select. Corp. ...	72 0*	75 0	—	—	72 6*	74 6*
Randfontein Deeps ...	4 6*	4 6*	5 0†	5 0†	4 3	4 3
Randfontein Estates ...	15 0†	13 9*	13 9*	13 6*	14 0*	13 9*
Roberts Victor ...	9 6*	9 6*	10 0*	—	10 0*	10 0*
Rooibergs ...	4 9*	4 9*	5 0*	4 9*	5 0*	5 0*
Rooipoort Uniteds ...	—	2 0*	2 0*	2 0*	3 0*	—
Ryan Nigels ...	—	—	3 0*	3 0*	3 3*	3 3*
Shebas ...	1 3*	1 3*	1 3*	1 3*	1 6	—
Simmer Deeps ...	1 6*	1 6*	1 6*	1 6*	1 6*	1 6*
S.A. Lands ...	5 10*	6 0*	5 10*	6 0	6 0*	6 1*
Springs Mines ...	57 3	57 9	54 3	53	57 6	58 3
Sub Nigels ...	20 9*	22 0	21 9	21 9	22 0*	21 9
Van Ryn Deeps ...	66 0	66 9	65 9	65 3*	66 0	66 0*
Village Deeps ...	—	16 0*	16 6*	—	16 6*	—
Wit. Deeps ...	10 6*	10 6*	10 6*	12 0†	10 6*	—
Wolhuters ...	—	3 0*	3 3†	—	3 3†	2 9*
Zaaiplaats Tins ...	11 6*	12 6	12 0	12 6†	12 6*	13 0†
Union 5 per cent. ...	—	£102 17 6*	£103 5	£103*	£102 7 3*	£102 5
New Stat's ...	22 6*	23 0*	22 9	23 3	22 9*	23 0*
S. Van Ryn ...	9 0	9 9	9 0	9 6*	—	8 6*
S.A. Alkali ...	31 6*	33 0*	30 0*	30 0*	31 3*	31 0*
West Springs ...	23 0	21 6	23 0*	23 6*	23 6	23 3
Do. Options ...	—	9 6	8 6*	—	—	8 9
New Jagersfontein ...	90 0*	—	92 6*	92 6*	—	103 0

*Buyers. †Sellers. AOdd Lots. BEx London.

*Buyers. †Sellers. AOdd Lots. BEx London.

Witwatersrand Agricultural Society.

ANNUAL EASTER Show & Exhibition MILNER PARK, JOHANNESBURG, 16th to 21st APRIL, 1919

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J. G. TORRANCE,
Secretary.

Barnato Group.

The results of operations of the Barnato group for February are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	41,000	£49,414
Ginsberg	75	10,500	11,683
Government Areas	180	101,000	179,658
Langlaagte Estate	200	38,160	48,919
New Primrose	90	15,600	15,316
New Unified	60	12,300	11,039
Randfontein Central	600	135,000	153,191
Van Ryn Deep	90	43,350	94,990
Witwatersrand	215	30,750	34,944

Totals and averages ... 1610 427,660 £599,154

January totals ... 1610 456,120 £631,986

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit includ- ing Sundry Revenue.
Consolidated Langlaagte ..	£40,544	19.777	£9,039
Ginsberg	11,240	21.409	527
Government Areas	110,064	21.795	70,156
Langlaagte Estate	38,412	20.132	10,624
New Primrose	11,104	18.083	1,290
New Unified	9,289	15.104	1,786
Randfontein Central	145,588	21.568	8,448
Van Ryn Deep	47,454	21.894	48,163
Witwatersrand	32,447	21.104	4,021

Totals and averages ... £449,142 21.004 £154,054

January totals ... £473,527 20.763 £162,943

Monthly Gross Profit, 1919.—January, £162,943; Feb-
ruary, £154,054.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of February of the undermentioned companies of the Consolidated Gold Fields group:—

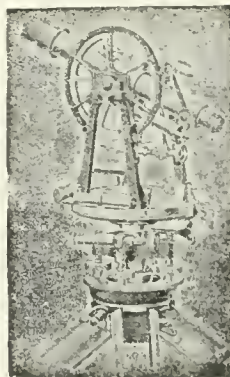
Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs.	Total Profit
Simmer and Jack ...	320	7	37,100	10,539	£3,865
Robinson Deep ...	90	7	36,000	11,732	*1,047
Knights Deep ...	400	11	77,600	16,082	*455
Simmer Deep ...	220	10	37,900	10,034	*2,661
Jupiter ...	80	5	22,100	5,723	*1,008
Sub Nigel ...	30	2	8,500	5,744	7,930

Totals ... 1140 42 219,200 59,854 £6,654

* Loss.

Gold Reserve.—Simmer and Jack, 600 ozs.; Sub Nigel, 3,231 ozs.; total, 3,831 ozs.

Shortage of native labour and short month adversely affected operations.



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TWENTY-FIVE YEARS AGO.

(From the "S.A. Mining Journal" of March 17th, 1894.)

The announcement of Mr. E. P. Rathbone's appointment to the position vacated by Mr. Woodford has been received with universal satisfaction. Mr. Rathbone's professional standing and integrity are well known. He possesses an almost unrivalled acquaintance with the various Witwatersrand mines extending over a long period, and is personally known to, and respected by, the majority of mining men. In the formation of the Mine Managers' Association Mr. Rathbone took an active part, and we feel sure that in the execution of his official duties he will be able to confidently rely upon the goodwill and support of its members.

It is clear, from the chairman's statements at the recent extraordinary general meeting of the Henry Nourse shareholders, as also from the fact that the directors have themselves guaranteed to take up at 40s. any unapplied for balance of the new issue of 25,000 shares about to be in the first instance offered to shareholders for subscription *pro rata* to their holdings, that both the prospects of company are excellent and that in these the fullest confidence is felt by the management.

"ORION."—The improving prospects of this company can be seen on perusal of the recently-issued February report, which states that 40 stamps working for 22 days 3 hours crushed 3,420 tons, which yielded 90·222 ozs. over the plates. During the same period 1,600 tons of tailings were treated by cyanide, yielding 1,553 ozs. of bullion. The profits earned during the month amounted to £3,097.

Contrary to expectation the output for February has established a further record with the eminently satisfactory total of 151,870 ozs. 3 dwts., the output obtained over the plates alone having for the first time exceeded 100,000 ozs. The total value of the output is put down in the Chamber of Mines official returns at £524,330, a fact in itself sufficient to indicate the enormous additions to the value of the world's gold supply, which are now being regularly made as a consequence of the rapidly increasing output from the Witwatersrand fields.

THE SHARE MARKET.—The rise of the past week has enabled some of the larger speculators who have been hampered financially for some time past to release some large blocks of stocks at very nearly cost price. These shares are also making their way to London, and this fact once more proves how completely the London market has taken possession of our mines, as soon it will be absolutely necessary to send to London if we desire to purchase 100 shares of any of our leading companies.

ANSWERS TO CORRESPONDENTS

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"T. F. G."—The matter is dealt with in this issue.

"M. E."—(1) £70 000. (2) See the debenture issue advertised this week.

"Shank End."—(1) Impossible to say for a month or two. (2) Not dealt in on the Rand; London is the only market for them.

"Interested."—The company was absorbed in the E.R.P.M. at the time of the fusion. Write to the Secretary of the E.R.P.M., Corner House, Johannesburg.

MINING MEN AND MATIERS.

Professor J. H. Hofmeyr, B.A. (Oxon.), M.A. (Cape), who has been appointed Principal of the South African School of Mines and Technology, in succession to the late Dr. Constorphine, was born at Capetown in 1894, is a cousin of Mr. H. J. Hofmeyr, of Johannesburg, and nephew of the late Hon. J. H. Hofmeyr.

Mr. C. E. Mason, the principal mechanical and electrical engineering assistant to the Rand Water Board, has returned from military service in France, and resumed his official duties with the Board on the 18th ultimo. During the absence of the Board's Chief Engineer, Mr. W. Ingham, M.Inst.C.E., M.I.Mech.E., at Capetown in connection with the Board's opposition to the Private Bill of the Rand Mines Power Supply Company, Ltd., Mr. Mason acted in that capacity.

The following racy account of some well-known mining engineers, quoted from the *Sydney Bulletin*, will no doubt be read with interest by their colleagues in South Africa and elsewhere: "McDermott, recently appointed manager of the Ivanhoe, is one of a small group of Maorilanders, including J. A. Agnew and W. A. Macleod, who have made good in Westralian mining. Formerly underground boss of the show he is now running, McDermott went to the Sons of Gwalia, mainly on the advice of Govett, Ivanhoe's chairman of directors. He put the show on its feet again, and a grateful company sent his salary up to £2,000 a year. On the demise of Bob Nicolson, Ivanhoe's manager, last year, Govett, remembering McDermott's work at the Gwalia, selected him to the gilded billet, worth £3,500 a year, from hundreds of applicants all over the world. The Gwalia has made other reputations. Here W. J. Loring, a 'newchum' from the United States, got the chance of his life. Agnew was another helped on the upward path by the Gwalia and so was H. C. Hoover, now U.S. Food Controller, and mentioned freely as a future President of the Republic. He established the system of allocating costs of mining, treatment and development to the separate departments, instead of the old-time generalisation of expenditure, which made it difficult to discover waste and incompetency and sent good mines on the rocks. Macleod did not owe anything to the Gwalia, but came West from Charters Towers to take full charge for Bewick Moreing & Co., on the recommendation of Dr. McLaren, the geologist (another Maorilander), and has since drifted to London in a superior capacity for the firm."

Lydenburg Gold Farms.

The annual meeting of shareholders of the Lydenburg Gold Farms Company was held on March 6. In moving the adoption of the report and accounts, Mr. Richard Bowman (chairman) said the financial position of the company continued in a very satisfactory state. During the past year the net profits earned amounted to £2,941 17s. 5d., which was just about £1,000 in excess of the profits earned during the previous year, and the total amount of the liquid assets, consisting of cash in hand, investments in Union 5 per cent. Loan, and the balance of the purchase price of farms sold equalled the sum of approximately £26,000, showing an increase of nearly £6,000 as compared with last year. The life of the company during the past year had been a very uneventful one, and the policy of the board had been a strictly conservative one. Regarding the value of the farm Vlakfontein, the directors still held the same high opinion and expectations that that opinion would be justified, and that in course of time—exactly when it was difficult to state—it would be possible to deal with the farm on terms advantageous to the shareholders of the company. With the return of normal conditions it was hoped that it would be possible to negotiate for the satisfactory disposal of the farm, more especially in view of last year's legislation bearing on gold mining rights, which had to a greater extent recognised the just rights of owners of land. Mr. A. Sprinz seconded the motion, and the report was adopted. Messrs. H. F. Watson and W. McEwan were re-elected directors.

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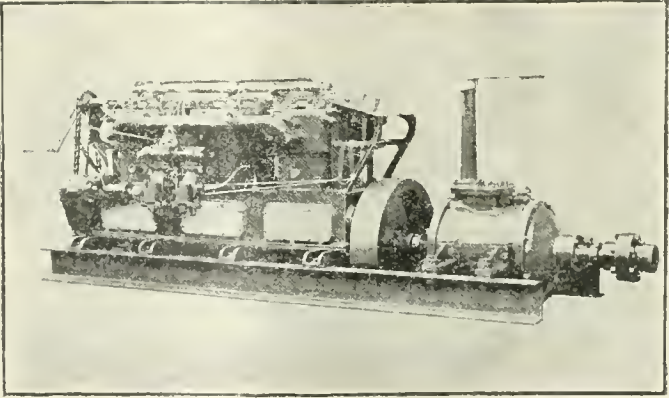
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ENGINEERING SECTION.

THE KALAHARI LAKE SCHEME.—I.

[By PROFESSOR E. H. L. SCHWARZ, Rhodes University College, Grahamstown.]

At the Johannesburg meeting of the Association for the Advancement of Science, in July, 1918, I read a paper entitled "The Desiccation of Africa: the Cause and the Remedy." The Johannesburg Committee printed the paper in advance and copies were available at the time of the meeting; it was subsequently published in the October number of the *Journal of Science*, Capetown. In that paper I dealt with the causes which have led to the drying up of the continent and the remedy, where it could be applied, dealing with the problem as it affects South Africa only in so far as it fell in with the general scheme. I propose in the present paper to deal with the question from a South African standpoint, detailing as far as my information allows me the nature and extent of the works necessary to carry out the scheme and the immediate benefits to be derived from it. The criticisms that have been levelled against my scheme fall principally into two classes: (a) those made by people who stated that the topography of the country was such that the diversion of the rivers could not be brought about in the way I described, and (b) those made by people who denied that any benefit could be derived by restoring the old Kalahari lakes. In answer to the first of these, I can only reaffirm that my data are correct; I had by me when I drew up the scheme very full information from residents in the area affected and as for the western part of the project, I have recently been all over the ground, and the statements that there are insuperable obstacles are not true. For the second class I would ask that attention should be paid to the primary argument, that the waters that formerly used to flow into the central South African lakes are now diverted to streams that carry them away to the sea, and whereas formerly these waters were available for supplying moisture to the atmosphere and strengthening the underground springs, now they are hurried away out of the country and the channels whereby they escape act as drains which are not only carrying away the water that falls as rain, but exhausting the country of the underground water which has come down to us from more favourable times.

THE OVAMBOLAND PLAIN.

The western half of the project for filling up the Kalahari lakes falls generally into the vast river plain of Ovamboland. This part is important for several reasons. In the first place, when the scheme is in working order and the water of the Cunene River, after traversing Ovamboland and restoring it to the condition of 1860, when Andersson described it as "glorious," runs into the Okavango River, it will reinforce this river so much that it will be able to clear its channels of the ever-encroaching sands of the Kalahari. But far and away more important than this will be its effect on the rainfall of the Angola Highlands. These highlands are the source of the Cunene, the Okavango, the Zambesi and several of the head-streams of the Congo. The Ovamboland plain which lies to the south extends over an area of something like 70,000 square miles. In former times the whole of this plain used to be flooded annually from the Cunene and Okavango Rivers, and the enormous evaporation from this formed a very important factor in the rainfall of the Angola Highlands. Nowadays, only half of this plain is flooded and the portion receiving the floodwaters is becoming smaller every year. It is clear that if this Ovamboland plain becomes as waterless as the adjoining Kalahari the effect on the Angola Highlands and the great rivers that rise in them will be disastrous.

It will be seen in the sketch map that there are several spillways that lead out of the Cunene and Okavango Rivers: from the former there are the Mui, the Ovale, the Kwamatua and the Itaka. These spillways are shallow river-beds opening on to the main rivers at a few feet above the level of the normal flow; when the rivers are in flood, the water banks up at the cataracts and a certain amount flows out along these spillways. The Ovambos distinguish these shallow channels from the deeper river-beds, calling the former "Oshanas" and the latter "Omlongas." The word "Omuramba," which appears in most maps of the and the Kalahari country, simply means "river-bed" and is applied equally to the smallest oshana and the biggest river, such as the Okavango and the Zambesi. On the Cunene side there are several oshanas that lead out on the east side; the river is banked up above the level of its flood-plain and consequently a certain amount of water spills over on the west bank, but as there is high ground here, the water collects in a number of vleys lying parallel to the river. In flood-time the east side of the river is practically a labyrinth of oshanas, but there are three principal ones, the Ovale, the Kwamatua and the Itaka. The last is not marked on the German or Portuguese maps, but it is quite unmistakable and, indeed, in the dry season it is the main roadway to Erickson's Drift; it then has a hard clay floor on which a motor car could travel at 40 miles an hour. On the Okavango side, the first spill-way is the Otjimpolo River, which I have traced right down to the Etosha Pan; the Tandawi joins the Otjimpolo River from the Okavango above the Portuguese border. The Hyæna and Lion Rivers probably do the same, but the bush was so thick at Kambonde's Vley that I was unable in the limited time at my disposal to investigate this point; native evidence was against any connection, in fact, several native hunters who knew the country intimately, stated definitely that there was no sign of a river-bed within three days' journey to the east. Further down the river the Fontein River leads out of the Okavango and could be used to irrigate a considerable area on the flood-plain, but this river ends blindly in the sand of the Omaheke. Lastly, the Okavango banks up a considerable distance up the Omatako; the water takes a side channel to Gasamas and then passes by a long string of vleys into the Ovambo River, and so into the Etosha Pan. I was very careful to verify this and obtained definite Bushman evidence that it was so. In 1917 the flood came over and I filled the Ovambo River to the tops of the banks and I have photographs of it in this condition. I followed the river up from Tsintsabis and saw the flood effects, and some six miles from Tsintsabis there is a wide oshana leading into the main river, some four feet above the latter, which showed every evidence of having led water into the Ovambo River. When the flood subsided it left pools in the river and barbel as big as a man's thigh were caught at Tsintsabis, this is on the evidence of the Military Police stationed here, and these barbel are typical Okavango fish. I must explain that the country is so flat that these oshanas or Omlongas of the Ovamboland plain do not flow like an ordinary river; for one thing, their beds are full of sand. When the Cunene or the Okavango rise above a certain height the water pours into the spillways and flows quite strongly for a short distance, then the water encounters a dam of sand and comes to a standstill until it either washes it away or filters through it to the next open portion of the channel. In that way the current is so slow that the Ovambo in full flood appeared to have no current at all, and a stick thrown on to the water would remain stationary for a considerable time before it eventually floated downstream.

This sluggishness also applies to the Cunene, which was measured by the same stick method; a stick took half an hour to float a hundred yards, that is, when the river was in normal, not in a swollen, flood. Such evidence makes me believe that the Portuguese estimate of the fall of the Ovamboland plain in Angola as one foot in the mile is excessive; I obtained the same between Namutoni and Ondongua by barometer readings, but on my return later in the season I found no difference in level whatever. The stick method applied to the Okavango gave a flow of five miles an hour, and here the gradient is reckoned at one foot to the mile.

The river system of the Ovamboland plain is so extraordinary that I believe it cannot have a parallel anywhere; these looping spill-ways uniting in the Etosha Pan must have some reason for their existence. The explanation seems to me to be as follows: The cataracts of the Cunene are of comparatively recent date; formerly the Cunene flowed directly into the Okavango. The latter river is encumbered with cataracts which impeded its flow, consequently the Cunene having only a very feeble fall, had to find some outlet for its energy and cut sideways and naturally on the side away from the mountains. In this way the river formed ever wider loops to the south until it came up against the hedge of hills which borders the plain on the south, cutting as it did so the vast penepain, as the Americans call it. This is the Ovamboland plain, covered with white river sand; no stone is to be found north of the Etosha Pan. It is covered with bush and forest, thorn, mopani and, along the Otjimpolo River, teak. In this bush there are vast natural clearings, some 40 feet lower than the general level of the bush country round them; these clearings are each occupied by different tribes of the Ovambos. Ondongas, Ombarantus, Ukulukathis, Ukuluthis, Ondombothoras, Uquambis, Ugunyamas, and so forth, tribes which supply the labour for the mines and railways of the South-West Protectorate. These clearings are covered with hyphaena palms and magnificent morula and fig trees, in between which the natives plant their mohonga, a sort of kaffir corn. The Kalahari, which borders the Ovamboland plain on the south-east, is a similar sand country covered with red, that is, blown sand. In the dry season the clearings are wastes of dazzling white sand, but in the rainy season, since the country is flat and there are no rivers with sufficient fall to take the water away, about half the country is under water and the natives gather water-lily roots in what was a few weeks previously a desert. In addition, formerly the country received flood waters from the Cunene and the Okavango Rivers. The country requires this annual flood, the Efunja, because the rainfall is totally insufficient to support the tropical vegetation. The following is the rainfall at Ondongua for the last 12 years:—1906-07, 17.5 inches; 1907-08 11 inches; 1908-09, 37 inches; 1909-10, 20 inches; 1910-11, 9 inches; 1911-12, 25 inches; 1912-13, 12 inches; 1913-14, 15 inches; 1914-15, 12 inches; 1915-16, 11 inches; 1916-17, 29.2 inches; 1917-18, 19.6 inches; an average of 18 inches, with a minimum of 9 inches.

When the rock-barrier on the west was breached at the Rua Cana Cataract, the Cunene poured over the falls and was hurried away to the sea. Since then no floods have been sufficient to carry water from the Cunene to the Etosha Pan. Every year the river is sawing down the rocks of the cataracts, and it is becoming more and more difficult for it to spill over into the oshanas. In Nangora's time, that is, when Andersson was at Ondonga, about 1850, the oshanas used to flow past the chief's kraal and the people used to catch the river fish in basket traps, and in fact used to live on these fish for a considerable portion of the year; nowadays the floods do not come near the place and Chief Martin, Nangora's successor, keeps some of these fish in a water-hole as royal fish and as relics of the past. The time is not far distant when the Cunene will have cut down so low that no water will spill over into the Ovamboland plain; the oshanas, then, instead of being the channels by which the country is supplied with water, will become drains by which the water is drawn away from it. Ovamboland will become a waterless tract like the Kalahari; the natives will

have to be accommodated with other territory and the arid conditions of South Africa will be accentuated. To put it in another way, we have in Ovamboland a clear case of a fertile district being converted into a desert, and if one requires to be told what the effect of a desert is on the adjoining country, I can refer him to descriptions of Egypt.

(To be continued.)

Electric Ships and British Pioneers.

As the "New Mexico" is the first large battleship fitted on this system, it is generally assumed that the application of electricity to the driving of ships is an American invention. The pioneer work was, however, done by British engineers, notably Captain Durnall and the late Mr. Mavor, and the first patents for this system were taken out by them. It is to the credit of the American naval authorities that they were the first to try the system. They built a large collier with electric drive and tested it along with a sister-ship fitted in the ordinary way. As a result of these tests, plans were made for much more ambitious equipment on the Dreadnought "New Mexico." Great Britain has, however, to her credit not only the initiation of this revolution but also the building of an early electrically propelled merchant vessel, the "Wansty Castle."

The Electric Workshop Repair Train.

Everybody has heard about the wonderful system of light railways which the British constructed for military transport in Flanders, but only now has information been made available about the repair trains which travelled backwards and forwards on these lines for the purpose of effecting repairs. There were six of these trains, each consisting of six vehicles, carrying electric generating plant and all necessary machinery. The cars were lit and heated by electricity. Owing to the narrowness of the gauge—just under two feet—the sides of the vehicles containing the generators and machines were divided longitudinally and hinged at the bottom and the top so that the lower half might form a platform and the upper part a canopy when the train was "in action." During bad weather tarpaulins were fixed to the canopies and completely screened the men from wind and rain. Excellent service was rendered in many parts of the front by these workshop trains.

A New System of Electric Ploughing.

Several methods have been devised for applying electric haulage to ploughs, and the latest is a British invention which shows great originality and ingenuity. It serves three purposes—ploughing, drainage, and transport. The inventor proposes that overhead tracks shall be erected on A-shaped steel or ferro-concrete frames so as to form parallel lines on opposite sides of the ground to be cultivated. On each track is an electric traveller with a winding drum which hauls on an endless rope to which the plough or other implement is attached. By making the implement double-ended it can be hauled backwards and forwards without turning at the end of each journey. Underneath the line of A-shaped frames is constructed the main concrete drain; and the digging of mole drains leading into the main drain can be carried out by a draining machine hauled in the same way as the plough. By extending the system of overhead tracks they may be used to carry materials and produce between the field and the farm or the main road. Where the ground is undulating the level of the track is preserved by making the supports longer or shorter as required. Although this equipment may seem costly, it is not so in effect, as it includes drainage and transport and renders hedges, ditches, and roads unnecessary. The use of electric power also cuts out the necessity of carting fuel or water for field operation. For intensive cultivation on modern lines this well-thought-out invention should have a most interesting future.

THE KALAHARI SCHEME.

Mr. S. A. Deacon writes to the Press as follows:—I venture to think that but few of your readers are aware of the interesting fact that long ages ago the river Chobe, now a tributary of the Zambesi, was an affluent, the main affluent, of Lake N'Gami, whose surface then covered an area of some thousands of square miles, and whose effluent, or outflow, at its southern extremity, formed a river of considerable size flowing in a more or less sinuous course for some hundreds of miles through the Kalahari, terminating near Boesap in its junction with the Vaal. The old bed of this river was traced for a great distance by Dr. Livingstone, in whose opinion the Chobe had been diverted from its original course through Lake N'Gami down to the Vaal by some great cataclysm which changed the topography of that part of the country, turning the river into the Zambesi (vide *Livingstone's Travels*). Comes the question, would it be possible to restore the old order of things and again make the Chobe a tributary of the Vaal? The greatest measure of success calculated to attend Professor Schwarz's scheme for ameliorating the present unsatisfactory condition of our climate (consisting in the restoration of the Kalahari lakes to their former dimensions and thereby increasing the atmospheric humidity by the evaporation of their contents) would be far surpassed in benefit to the country at large by such diversion of the Chobe again into the Vaal. This would, of course, necessarily ensue from the carrying out of Professor Schwarz's scheme, which includes the restoration of Lake N'Gami; but it is rather surprising to note that in all the correspondence thereon recently appearing in your columns, this far more important and less problematical of the two-fold result of restoring Lake N'Gami has not been taken into account. It goes without saying that such a river flowing through the now comparatively worthless Kalahari would convert it from a howling desert into one of the finest tracks of ranching country in the world, and its possible restoration might therefore be expected to claim priority of interest over professor Schwarz's hypothetical plan of increasing our rainfall. To show that this proposed diversion of the Chobe into its original course is not, as might perhaps be supposed, anything new, I might mention my having tried to stir up an interest in the matter, by a lengthy article in the *Cape Times* some thirty or more years ago, urging the then Government to have a rough survey made to test its practicability; but money, enterprise and a comprehension of the real wants of the country were all too sadly lacking to obtain for it any consideration. We were too content to remain importers of meat (to the tune of over a million sterling a year!) to worry about plans that would help us to become exporters. Happily times and Governments have changed, and it is to be hoped that, under the present one, something towards testing the feasibility of the thing will now be done.

In vain I tried to interest the late Cecil Rhodes in the matter; but, whether he was apprehensive of its clashing with his other plans, or of the reduced flow of water in the Zambesi, detracting from the grandeur of the Victoria Falls, he would none of it. Failing to arouse any interest in the matter in the Colony, I next endeavoured, through a stock-broking friend in London with influence in high financial quarters, to get up a company for the purpose, assuming, as I felt warranted in doing, that the then ruling authorities would have gladly conceded possession of the whole of the otherwise useless Kalahari to it in consideration of the immense benefit that would accrue by its development to the country at large. But I met with no better success than did the party who, it may be remembered, had come out some time previous to that with the object of exploring the Kalahari on cattle-ranching aims intent. Exceptionally abundant rains having fallen that year, they were able to traverse a great part of the Kalahari, which being then at its very best, they were enabled to take back home a glowing account of its adaptability to the proposed purpose. Some of your more elderly readers will doubtless remember about the said expedition, and perhaps be able, which I am not, to call to mind the name of its leader, which had an Italian sound—Fraconci, or Franchetti, or "words to that effect." [Farini, no doubt.] His failure to form a company to exploit the Kalahari was, if I remember aright, due to the absence or extreme scarcity of water on it, a drawback hitherto to its development, which doubtless can, and let us hope will, in the near future, by means herein proposed, be happily obviated. With regard to my own fruitless attempt to form a company, whilst millions were readily available for the extraction of diamonds and gold, the grand prospects and almost unlimited possibilities of this country from an agricultural and ranching point of view were not yet realised, and I was somewhat curtly and not over politely informed that my views were visionary, and that I was a hundred years ahead of the times! But we should be very careful how we dub a man a visionary in these days of aeroplanes and motor-cars, submarine cruisers, and guns carrying a ton weight projectile the best part of a hundred miles! For the purpose of a rough survey, in order to ascertain the practicability or otherwise of this proposed restoration of Chobe to its old course, the services of Prof. Schwarz could be advantageously supplemented with those of others who are well acquainted with the lay of the country about Lake N'Gami and with the present course of the Chobe, and who are able to point to the cause of its diversion from its original course into the Zambesi. A very interesting article on the subject by one such appeared in your columns not very long ago, in which the writer thereof estimated the cost of turning the Chobe into its old course at about a quarter of a million pounds, or about the cost of the Sunday's River dam, and less than that of damming up the

Crocodile. Some ten or twelve years ago I, equally unavailingly, endeavoured to arouse an interest in the matter through the Press, and still more recently in a letter in *The Farmers' Weekly*; but it was as a voice crying in, as well as of, the wilderness. Let us hope that every support will be afforded Prof. Schwarz to test his evaporation theory, with which that of the divergence of the Chobe into its old bed is correlative. Let the old dried up, and drying up, lakes be replenished; and, should the Professor's views prove untenable, we shall nevertheless get the worth of our money in a permanently flowing river, whereby some thousands of square miles of now useless desert country will be reclaimed, and prove, in respect to its adaptability for both agriculture and ranching, second to none in the world, literally making the desert to blossom as the rose. I must apologise for taking up so much of your space, but it is a matter that should not, and must not, be let rest.

Another Water Supply for Bloemfontein.

The Bloemfontein Town Council last week adopted a proposal put forward by a special committee to participate in the great irrigation scheme on the Upper Modder River. This proposal was the result of a meeting between the committee and the Board of the Modder River Irrigation Scheme. Under the proposed agreement between the Board and the Council: (1) The Town Council will advance £75,000, for which they must have a first call on 1,000 million gallons per annum, if and when required for all municipal purposes; (2) legislation is to be passed embodying this agreement and protecting the catchment area above the Maze'spoort Dam against all future irrigation works; (3) the Town Council to have the sole fishing and boating rights, in so far as they belong to the Board; (4) water is to be delivered in the furrow into the settling tanks, except when the furrow is being repaired; (5) all surplus stored water to be shared *pro rata* to the Town Council contribution. The Board, however, may use all the water until required by the Town Council. This agreement gives the town of Bloemfontein an alternate water supply to the excellent system it already possesses, and will make provision for the big growth of population which is expected to result in the town from the land development under the Modder River Irrigation Scheme around the city during the next forty years. It will also obviate the expenditure of £100,000 on additional waterworks, which the City Engineer estimated would be necessary within the next ten years, to meet the growing needs of the town's increasing population. In commending the scheme to the Council, Mr. Barlow referred to the vast prospects of development and expansion. There were going to be 30,000 families along the Modder River some day, he said, and it was absolutely necessary for them to make provision for the years ahead. The day would soon come when they would need more water than they had now, and it would be fatal then to have to buy water from other parts. A meeting of rate-payers will be held on March 3 to sanction the loan.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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THE QUESTION OF THE JACK HAMMER.

Important Contributions by Messrs. Wessels, Stuart Martin and Harris.

AMONG the contributors to the discussion on Mr. Henry S. Potter's paper on "Hammer Drills—Their History, Design and Operation," at the last meeting of the Institution of Engineers, were Messrs. Wessels, Stuart Martin and Harris. Mr. J. J. Wessels (member) submitted the following: As Mr. Potter remarks in his opening paragraph, this subject is a most important one in these times of native labour shortage; for that reason every member of this Institution who has had any experience in the operation of these drills should contribute a few notes on the subject, particularly in regard to the difficulties encountered in practice, for only in this way will the ideal machine be evolved.

JACK HAMMERS AND RIGS.

Efficient stoping calls for a rock drill which will work under hand stoping conditions. The jack hammer drill attempts to fulfil this requirement, but as yet has only partly succeeded. The best results in stoping would be obtained if the jack hammer were light enough, and the vibration so inconsiderable, that a man could operate it throughout the shift without the aid of a rig or support; at present this is possible only in the more steeply inclined stopes. The nearest approach to the foregoing in ordinary stoping is attained by the use of a non-rigid rig or support for the machine, with a shock absorber. The use of the jack hammer on a rigid mounting greatly detracts from its possibilities in all-round efficiency. I, therefore, agree with Mr. Potter that the future of the jack hammer greatly depends on the evolution of a comparatively light machine giving the minimum of vibration for a reasonable drilling speed.

MAINTENANCE OF JACK HAMMERS

The jack hammers with which stoping is usually done weigh in the neighbourhood of 40 lbs., and have a piston diameter of about 2½ inches. My experience of this size of machine is that the strength of blow and piston speed is up to the limit which the metal used in the construction of the machine will permit. While the size of drill steel, kind and condition of drill shank used, have considerable bearing on breakages in the machine, still it appears that the fault is not always due to these, for parts, such as pistons, ratchet cases, pawls, etc., frequently break for no other apparent reason than that the quality of steel is not high enough to stand the shock and strain sustained by the part. I am given to understand that the best known grades of steel are used in the manufacture of these machines, so that it would appear that still higher qualities of steel are required; these may be forthcoming, as one hears that considerable advance has been made in the discovery of new and improved high-grade steels during the last four years, but as matters now stand the manufacturers have little or no chance of giving a "factor of safety," as it were, to the working parts in the size of the machine under discussion, this then also points to a design of machines on a smaller scale.

DRILL STEEL.

Efficient mining with the jack hammer depends as much, if not more, on the drill steel as on the machine itself. The introduction of the high grade steel necessary for these machines has brought a multitude of troubles to the mines. In the days of reciprocating machines and hammer boys, the drill steel of about 65 per cent. carbon content was all hand sharpened and tempered by tradesmen who were familiar with that grade, and which requires considerably less exact treatment than the present 8 per cent. and 9 per cent. carbon steel now sharpened in machines operated by a "person" who has "learned the trade" in a week. That high grade steel requires *exact, skilful and scientific* treatment is an axiom universally accepted, yet the drill shops on the mines are expected to turn out a high-grade tool in thousands per day, using semi or unskilled labour.

using imperfect furnaces, which contaminate the steel through impurities in the gas or fuel, with no means of measuring furnace temperature, with no knowledge of the steel composition, or the exact degree of heat necessary for hardening or annealing, and in general with but a vague idea of the whole process. The question then as to what is to be the final diameter and section of drill steel for the jack hammer, to my mind, cannot be determined as yet, for, as previously mentioned, we probably have not got the most suitable machine, nor have we the capacity to turn out good drill steel, so that the relationship between strength of machine material and drill material is by no means decided.

SPEED OF ROTATION.

The speed of rotation of the drill steel in hammer drills, I am afraid, is more the outcome of mechanical convenience in design than knowledge of what rotation with a given kind of bit gives the highest drilling speed: this is a fairly complicated subject, but it deserves mention, because a change in the speed of rotation has been known to markedly increase drilling speed. I suggest that this matter should be given serious consideration by rock drill designers. In concluding these remarks, I wish to point out that individual mines have, at great cost, experimented in various directions in regard to rock drills. In many cases, owing to there being no co-ordination between these mines, the work has been duplicated: methods and principles already elsewhere condemned have again and again been futilely tried and in general a great deal of energy and money wasted. Further, there is the strong probability that joint handling of the problems would have increased the mining efficiency to a very considerable extent. I have mentioned in my remarks certain problems in connection with jack hammer mining which have yet to be solved; these bear on the best size of machine, amount of and means of overcoming vibration difficulties, strength of material in machines with its relation to maintenance cost, best size and section of drill steel, treatment and sharpening of drill steel, speed of rotation and its relation to drilling speed; and many others which I have not mentioned for fear of obscuring the main points. These matters are of vital importance to the mining industry, and decades will pass before they are finally settled unless there is co-ordinated action between the mines and the manufacturers of rock drills and steel. I beg to suggest, therefore, that immediate steps be taken to secure this co-ordination by appointing a committee, whose members shall be technical to the various phases of the problems. Money and opportunity should also be provided and then I have no doubt but that improved results will immediately be obtained.

Mr. H. Stuart Martin said he did not propose to add to the discussion with any particular reference to Mr. Potter's paper, but realised the value of the jack hammer as a labour-saving and economic device. He wished to point out that one of the chief causes of its failure to stand up to expectations would, in his opinion, be due chiefly to unduly rough usage and want of proper lubrication. In the case of one machine that had failed, the proper method of lubricating the machine had not been provided. He thought that when not in use the jack hammer should be carefully cleaned and oiled and put into a box. He felt that a little more care generally in the handling of all machines would result in greater economy and satisfaction.

Mr. H. E. Harris said that with regard to the Schmucker drill, described by Mr. Potter in his paper, it was therein stated that the engine that effected the rotation was a three-cylinder engine. He wanted to correct that: the rotation was effected by a four-cylinder engine. Dealing, however, with the matter of hammer drills, he quite agreed with a good many of the points made by Mr. Wessels and Mr. Stuart Martin. There had never been enough attention paid

to what he might call the ammunition for the machine, and that was the proper making of the drill steel from the shank to the bit. He thought a great improvement had to be brought about, and it must be done by careful supervision. It was of no good simply to start supervision and keep it going for sixty or ninety days and then change methods, or practically forget all about it. Lubrication was certainly one of the most important things. He had had a little experience in that line for the past ten years, and on one mine only a few days ago the same thing came up again—no lubrication. Plenty of lubrication was provided for, which the machine did not get. The jumpers, he thought, were more essential, in some respects, than the machine, providing the necessary air pressure was available. The Allies would never have won the war without artillery, which was the basis of all the land operations, and he thought the basis of all mining on these fields was the drilling underground done by hand or machine; if it was to be done by machine, he did not consider it was of any use to go about it in half-way measures. With proper supervision, enough experimental work, which, he admitted at once would take a number of months to complete, would have to be done to get good results. He might refer in that respect to the work that Mr. R. M. Catlin now of New Jersey, had done. Mr. Catlin was quite well known on these fields, or he was a number of years ago. Mr. Catlin had tried, he thought, every model of every hammer drill that was ever made in America or could be purchased abroad in the last ten years, and the results he had obtained for a number of years now by specialising on certain types of machines for certain work had been really marvellous, not with one or two machines for periods of four or five months, but with comparatively large numbers of machines for long periods, anything from twenty to thirty months. The Institution might write to Mr. Catlin and get some of the data available. In addition to doing ordinary experimenting on the mines, Mr. Catlin had taken the trouble to

visit factories where practically every different hammer drill in America was made. He wished to compliment Mr. Potter on the information that he had brought before them. Speaking from any little knowledge he, the speaker, might have of patents and so on, he was sure Mr. Potter had gone to much more trouble than most of them imagined. He also wished to thank Mr. Potter for the fair way in which he had treated all his competitors in the paper.

Useful Fireworks.

It is not generally known that the smoke screen which played so vital a part in the famous British Naval attack on Zeebrugge was devised by the late Commander Brock, of firework fame. The firework maker was also kept busy during the war producing flares, parachute lights, and other things for turning night into day. At first there was no means of finding out which composition or size of flare gave the most efficient light, and the Illuminating Engineering Society of Great Britain was asked by the Government to solve the problem. A new type of photometer or light-measurer was forthwith invented to give a rapid reading of the light given off at any moment by a brilliant source like a star-shell or flare. It consists of a small tube with a tiny electric lamp inside it at one end. An opening is cut in the tube lengthways to admit a strip of metal stencilled with the letters of the alphabet. When the lamp is on each letter of the alphabet is illuminated in a descending scale according to its distance down the tube. If the light which falls on the instrument from the outside happens to be the same as the internal illumination of any particular letter, that letter will vanish. Thus this ingenious invention provided a scale on which an observer could read off, second by second, the light provided by a flare. By its use the composition of flares was improved, and the Ministry of Munitions found that British chemists were able to make better flares than any of those captured from the enemy. Three or four British flares burned together reached a brilliance of from 120,000 to 130,000 candle-power, which is equal to about 1,000 arc lamps.

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IRON AND STEEL MAKING AT PRETORIA.

Mr. E. Rooth on the Question of State Aid—£1,500,000 to be Spent—Diamond Cutting Beginnings.

In the debate on the Budget in the House of Assembly this week, Mr. E. Rooth made an important speech on new industries at Pretoria and in the Union generally. Mr. Rooth dealt first with the diamond industry, and held that it was essential that everything possible should be done to foster this industry in South Africa. A successful beginning had already been made at Pretoria, where Mr. Drabbe had started a cutting and polishing business, and had turned out some excellent work. He had imported a number of expert workmen from Holland, and had proved conclusively that it was possible, even in South Africa, to cut and polish diamonds. He was glad to say that the Government had dealt faithfully with the representatives of the diamond industry, who had at first found great difficulty about allowing Mr. Drabbe to acquire the necessary stones, a small percentage of the enormous number of stones our diamond mines yielded. It was absurd and ridiculous to think that, within a few miles of the Premier mine, it should have been difficult to purchase a few stones for the purpose of cutting and polishing them. The mine owners must clearly understand that the public would not tolerate such action. They should be able to find work in that direction for a large number of returned and disabled soldiers as had been done in England. Touching on the importance of developing the iron industry, Mr. Rooth said that good iron could be made from South African ore, coke and limestone. This had been conclusively proved by the iron works recently set up at Pretoria by Mr. Delfos. The sum of £45,000 had been spent in experiments, and it was now intended to proceed with the works. The suitable plant, etc., would cost £1,500,000. The Government should assist and foster this industry as much as possible. Other Dominions had assisted in different ways to strengthen their iron industries. For instance, in Canada the bounty system existed. The production of iron there increased from 38,000 tons in 1895 to 342,000 tons in 1906. The production now was much greater, but the Canadian Government still assisted by offering to purchase all the iron produced by the new blast furnaces erected during the next two years. British Columbia had taken similar action. In India the Tata Iron Works were erected in 1909 with a capital of £1,500,000. The Railway Board gave an order for 20,000 tons of rails per annum for ten years. In Australia a similar arrangement was made in 1917 with the Broken Hill Company, which supplies the Commonwealth Government with 4,000 tons of rails per month, while the New South Wales Government purchased 3,000 tons per month, making 7,000 tons per month, or 84,000 tons of rails per annum. In Holland iron and steel works were being erected at a cost of £2,000,000 sterling, the Government participating in this undertaking to the extent of £600,000.

SHOULD ORDER RAILS.

He did not suggest that the Union Government should give bounties, impose duties, or assist the Pretoria company financially, but they might place a standing order for a number of years for a fixed quantity of rails, etc., and for steel plates and bars, as the Indian and Australian Governments had done. For the six years ending 1909 the consumption in South Africa for the C.S.A.R. alone was 32,000 tons per annum. For the South African Railways the average consumption of rails for the last seven years was 50,000 tons per annum. The Union Government should place a good standing order with the Pretoria company. If the contemplated works were erected about 300,000 tons of coal per annum would be carried to the works. Additional industries would be started, and the railway revenue would be raised by about £100,000 per annum. Many poor whites would get good permanent employment not detrimental to health. They would not fall back on the State as was the case with miners. Dealing with railway rates, Mr. Rooth said the increase of railway rates by $7\frac{1}{2}$ per cent. above the

existing surcharge of $2\frac{1}{2}$ per cent., making a total of 10 per cent., hit the inhabitants of the inland parts of the Union very hard. This increase, which would also affect the mining industry, could but make the already precarious position of the low-grade mines very difficult. Agricultural machinery would have to bear about $2\frac{1}{2}$ d. per 100 lbs. more, and the fertilizers rate would be advanced from 15s. 5d. to 17s. per 100 lbs. The surcharge would bring the rate for sugar up to 5s. 1d. per 100 lbs. from Durban to the Rand. No wonder the cost of living in the Transvaal was high. If the £13,000,000 which after Union was debited to railway account, and for which the railway got nothing, had been debited to the general fund instead of to the railways, the sum of £450,000 per annum as interest on this sum would be borne, as it should be, by the general taxpayer and not principally by the inhabitants of the inland only. He had raised this question some time ago and hoped that justice would be done in the matter, and the interest made payable by all the taxpayers within the Union and not by a section only. Continuing, the hon. member thought that an agent or Trades Commissioner should be appointed in Buenos Aires to represent the Union, and pointed out that a great trade in coal, tobacco, wines, sugar, etc., from the Union could be fostered with the Argentine Republic. During 1913 our export trade to the Argentine was £284,000 and our imports from there amounted to £623,000.

Oil in the Zoutpansberg?

According to the *Zoutpansberg Review*, very favourable indications of oil have been discovered in the Northern Transvaal. Our Pietersburg contemporary remarks:—

For several years back corundum has been the vogue, and, from what we gather, the seeming omnipresence of this mineral has led at least one individual, in the person of an old-timer at the game, Mr. J. A. Burgess, to extend his ramifications. Having acquired an option over the farm Laatstehoop, near Pietersburg (the property of Mr. E. C. K. Baker), this hardened prospector began a prolonged search, with the result that he came across indications which prompted the feeling that the long looked-for oil had at last been struck. Extending his search his ideas took more substantial form, and, as a result of a "sample" sent for analysis, the reply was "oil—traces." The required incentive was attained, and further examination led to still more convincing evidence. The necessary machinery was set going, with the result that one of the foremost Oil Companies in America became interested. A recent visit to the locality was made for the purpose of providing them with further data. Unfortunately, and perhaps fortunately, the day previous a storm had swept over the area, washing away the oil traces on the pools of water. This served to show in clearer form the exudations from the banks of the spruit, and in more than one spot pools were found with oily matter with a consistency which allowed of no misapprehension. Huge bodies of black mud were exposed, and the requisite sands (salines, etc.) necessary to oil indications were all to be found. Even on slow running water there was to be found coatings of oil, and altogether there was evidence which disproved any ideas of vegetable matter being accountable.

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THREE SEAS BRAND.

IRRIGATION AND WASTE: DIRECTOR'S STRONG CRITICISM.

THE latest report of the Director of Irrigation contains statements calculated to arouse considerable public anxiety. Mr. Kanthack calls attention to what he terms the lack of co-ordination between the different technical departments of the Government service. There is, it is stated, a chronic shortage of experts in the Agricultural Department. The only men qualified to give a definite opinion as to whether land is or is not suitable for irrigation, and how it should be irrigated, are the experienced agricultural chemist and the scientifically trained farming expert. No big irrigation scheme should be undertaken, certainly not with public funds, until these purely agricultural aspects of the matter have been exhaustively dealt with. At present, however, Mr. Kanthack states, such assistance cannot be obtained. "We have some men in the service," he writes, "who are fully competent to do this work, but their duties within the Agricultural Department make it impossible to obtain their services in connection therewith. Meanwhile, hundreds of thousands of pounds are being risked, and large valuable areas of highly productive land are being ruined through ignorance." That water, in large volumes, is going to waste in every flood season, in the absence of storage facilities, is a familiar subject of complaint. Up to the present, this has been regarded as unavoidable. It would, however, be nothing short of criminal that money in large quantities should go to waste as well. Yet Mr. Kanthack tells us that on every side, both on Government schemes, big co-operative schemes financed with public funds, and on big private schemes, we are paying the penalty of the "narrow policy" which fails to ensure a sufficiency of expert advice. "The money lost through the agricultural mistakes on one moderate sized scheme," he tells us,

would pay the salaries of many expert chemists." Mr. Kanthack explains that the staff of the Irrigation Department is composed wholly of engineers. The irrigation engineer is expected to decide definitely on all questions regarding the availability of water, and construction of works. He also perforce acquires very considerable experience in agricultural matters. Within limits, he becomes a judge of land and its suitability for and behaviour under irrigation. But only "within limits." It is just here where he is most apt to go wrong, "and does very often go wrong." Both irrigation and land settlement demand, in addition to engineers, the services of skilled chemists, agriculturists, geologists. "Our main irrigating areas present dozens of difficult problems relating to the treatment of alkali soil under irrigation, and unless these are speedily tackled by chemists who thoroughly understand this work, we shall be faced with most serious failures on a large scale."

The British Electric Vehicle Boom.

Active preparations are being made in Great Britain for the production of every type of electric battery vehicle. Various firms which had been manufacturing in a small way before the war are extending their factories, and it is now realised that battery propulsion has a field of its own, notably in refuse disposal and other municipal services, in general delivery work through city streets, and in factory transport by means of small trucks. The British motor manufacturers are holding a meeting at which the whole field will be carefully reviewed, so that one may expect to find famous names in the motor world associated with electric as well as petrol and other vehicles. Moreover, arrangements are being made for co-operation with British electrical manufacturers in the production of motors and control gear suitable for electric vehicles. The British electrical manufacturers are so well organised that they will be able without difficulty, to select the firms best fitted for the economical manufacture of the electrical parts. The selected firms will concentrate on the work so as to get the benefit of mass production. The British battery makers have also by amalgamation and other developments, put themselves in a position to turn out ample supplies of traction batteries. A great increase in output will be required to meet the demand of the home market, but the arrangements now in contemplation will provide a large surplus for export to all parts of the world. The development of battery traction in Great Britain has been undertaken by an Electric Vehicle Committee on which representatives of electric supply undertakings, motor vehicle and electrical manufacturers, and various motor associations work together for progress.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Strike Epidemic—The Trend of Trade—Prospecting—Steel, Iron and Pipes—Timber Electrical Goods, Oils, Colours and Whitelead.

The strike epidemic is still the thing that matters. On Wednesday high hopes were entertained that the atmosphere was brighter towards an early settlement, so much so that a smart recovery took place on the Stock Exchange. However, at the time of writing, settlements have not yet been arranged, although there is still a ray of blue sky, inasmuch as negotiations are still in progress. The most significant feature is the statement of a Labour leader in connection with the Knight Central strike. He publicly stated that if the Knight Central men did not go back to-morrow (Thursday) they would have received 24 hours' notice. This is somewhat of a surprise, as the Chamber of Mines has hitherto been so pliable, that seemingly at last some of its pardonable patience during the war has become exhausted. It is stated that this attitude was brought about by the trouble at the City Deep over three or four men temporarily refusing to pay the strike levy, and again the Knight Central had one man who wished to join another trade union on his promotion. Both these cases were matters to be settled within the portals of the unions and not for the medium of a hasty strike in either instance, because such things are usually arranged by an adjournment for a week, and in the interim saner counsels prevail. A strike should be used as a very last resort and not as a first, because if used for every small object, the strength and importance of a strike loses its force and runs altogether ahead of public opinion. In the early days of the Rand a strike was talked about with bated breath, but now it is taken as a matter of course.

THE TREND OF TRADE.

One's search for information this week was disappointing, as the large majority of brokers and merchants were altogether disinclined to talk business, as they wanted the news and they had none to offer. The chief points touched upon were the strikes and the superabundance of goods and material in town and at the coast ports. It was ascertained that South Africa has a quarter of a million tons of wool, mealies, minerals in the crude, and other things awaiting freight from Britain. Again the oversea labour troubles are tantalising, as one shipping company has seven ships laid up in England and their sailings have been postponed through labour troubles at the shipyards, coal mines and ports. All these things may bring the speculator into the market again, as a man in the oil and colour business remarked that if one had £10,000 he could make a big coup in such things as linseed oil, white lead and similar lines. An authority on speculation asks: "Does the speculator do any good to anyone, or is he merely a parasite who has arisen because of big fluctuations?" To answer that one must first recognise that he is at least a product of these conditions. Some people think that speculation is the chief cause of fluctuating prices, but the fact is just the opposite. It is the fluctuation which causes the speculation. If this were not so, speculation could be started in any commodity at will. Such attempts to create speculation artificially have, however, always failed. When the price of any commodity is relatively stable over any considerable period of time speculation does not arise. You can see this at a glance by considering what commodities are dealt in on speculative exchanges, such as wheat, corn, coffee,

cotton, etc. Commodities in which the conditions of demand and supply, or both, are very uncertain, of a world-wide nature, and beyond the control of any single group of men. The speculators, then, are in the first place taking real risks arising from real business, therefore through this assumption of risks the merchants and producers are in large part relieved of the risks which otherwise they would have to run. The risks are there and some one must take them, as they have increased through the widening of all markets more or less into a world's market.

PROSPECTORS.

Prospectors are beginning to appear with specimens of various kinds, such as graphite from Port Shepstone, corundum from the Northern Transvaal, copper from the Messina where a number of claims have been pegged recently, as well as asbestos and diamond claims from all parts of the country. No syndicates of prospectors can be traced at present, therefore the wonderful specimens are being cautiously displayed by the old stagers.

STEEL, IRON AND PIPES.

There is a little better demand for pipes under two inches, but in consequence of heavy stocks and the keen competition there is a very small margin of profit. The pipe-fitting trade is, however exceptionally quiet. The news from the British factory in connection with the firm giving the before-going information is said to be exceptionally scarce through cable delays. Business is still very dull, although the last few days have put a better heart into things in hopes of the strikes being arranged. The quotation for wire nails is 50s. to 90s. in sizes from 1 in. to 6 in. Mild steel, $\frac{3}{4}$ in., 70s.; $\frac{1}{2}$ in., 65s.; $\frac{3}{8}$ in., 60s.; $\frac{1}{4}$ in., 55s.; $\frac{1}{8}$ in. upwards, 6 $\frac{1}{2}$ d. lb. Brass and copper rods, 3s. 6d. lb.; octagon or cruciform drill steel, 10d. lb.; sledge and spawling hammers, 10 $\frac{1}{2}$ d. lb.; English imported bar iron, 10s. to 45s. per 100 lbs.

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TIMBER, ROOFING IRON AND BRICKS

The price of deals remains much the same, perhaps a shade steadier if anything, at 1s. 8d. the all round price: floorings, 9½d.; ceilings, 6¼d.; beavers and substitutes, 5¼d.; pitch and Oregon pine, 9s. cube. Business very quiet indeed, practically at a standstill in Johannesburg, as the sawyers are on strike, therefore sizes cannot be cut. There are a few country orders, chiefly for stock deals and scantling. Roofing iron about the same, but galvanised flat iron is 60s. per 100 lbs. In the second-hand line business is stagnant, and as there has been no market, quotations are difficult, but they are firming up. At the auction sale at Roodepoort this week second-hand iron firmed up considerably. Roofing iron of good quality is about 1s. 2d. per foot, and deals 1s. per foot. Stocks of timber suitable for residential buildings, as well as roofing iron are not too plentiful. A leading merchant in the second-hand line, when it became known there was a good chance of the strike being finished, had many enquiries during the past few days, aggregating several thousands of pounds, as something like a building boom is expected immediately the "right away" signal is given. There has been some talk as to second-hand materials coming in, but so far nothing much has been available, therefore good stuff is getting scarce, as the farmers always have been purchasing a little, as the agricultural people have not been affected by the strike. In fact, several firms contend that business has been better to-day than at any time since the armistice. Some yards are short of 8 feet roofing iron because of the demand for cattle kraal erections.

ELECTRICAL GOODS.

Tubing, plain, ¾ in., is selling at 45s. to 50s.; screw, ¾ in., at 60s.; but there is very little in the country, in consequence of which contracting work is at a standstill. The mines have been buying very freely until a day or two ago, but now there is very little on the Exchange. The country business has been falling off lately, which is attributable to the industrial unrest. This applies equally to the Cape, Free State, Natal, etc.; the drop in business has been very considerable lately with those places. As regards lamps, there are plenty in the country to-day, wholesale 24s. a dozen, and retail 35s. a dozen, or 3s. apiece. There are shortages of materials in certain lines, the most serious of which are in cables, wiring and tubing, of which we have been short for months. There are practically no British lamps in the country, but mostly American and Dutch. The Japanese lamps are looked upon in the trade as inferior, and it is confidently stated that they will never become serious competitors of ours in this line until improvements are made. Telegrams have been received from all over the country by a Johannesburg merchant for tubing, of which there is very little left and which could be sold at almost any price. He had been promised 6,000 ft. last week from Durban but through some delay of his in confirming the order, he had lost the purchase, as it had been snapped up so quickly. By the way, wire is plentiful in Johannesburg.

OILS, COLOURS, WHITE LEAD.

Linseed oil is about 12s. for ordinary purchasers per imperial gallon, which is lower on account of such quantities on hand at various points throughout South Africa, and it is said that cable news report a lower quotation from Britain, but this is not confirmable. The quotation from merchant to merchant is anything between 7s. 6d. to 10s. according to the source of supply, be it the Argentine, India, America, etc. White lead cannot be sold under 1s. per lb., but various quotations are known to exist between merchant and merchant at 70s. to 80s. per 100 lbs.; however, no one seemed inclined to vouch for anything in the shape of quotations. Turpentine is about 72s. 6d. 2-4's, and 77s. 6d. 10-1's. Cotton seed—best salad—is 130s. per case. Olive oil, 25s. to 27s. 6d. per gall. Castor, 70s. to 75s. per case, and 100s. case med. Glycerine, 3s. to 3s. 6d. per lb. Business is very quiet as no outstanding

parcels have been sold or enquired for. Carbide is 80s. per 100 lbs. and miners' lamps 11s. each. All kinds of glass are plentiful with very little demand from Johannesburg and Reef at present.

The Mining and Engineering Record (Vancouver) states that a new source of wealth production is the extraction of potash from mine dumps, and it might be well for operators to have analyses of their dumps made to ascertain their prospective value as a source of this mineral. Representatives of the United States Department of Mines, who have been investigating the dumps of the Colorado gold mines, report the Portland and Golden Cycle waste dumps contain 6,000,000 tons of sands carrying 7 per cent. to 10 per cent. potash. The *Daily Mining Record*, of Denver, Colorado, states that the Golden Cycle dump is capable of producing 360,000,000 lbs. potash, worth 7 cents per lb., or 39,000,000 dollars. The company proposes to treat the dump, and expects to realise for the shareholders 22,000,000 dollars to 39,000,000 dollars from what has been hitherto waste.

The Premier Diamond Mining Company have of their own volition, reduced the hours of their workmen from 48 to 45 per week, without any reduction of wages. The men consulted the S.A. Industrial Federation in the matter, and the Federation saw no reason why the men should not accept the management's offer with the reservation that this would not restrain them in any way from taking part in a general shorter hours' movement. This action on the part of the management in the direction of shorter hours is very much appreciated by the men, who also remember that when other employers were granting war bonuses the Premier Mine raised wages by the amount asked for by the employees.

Diamond Digger's Luck.

An interesting story of good luck on the diamond diggings is to hand. An official from a Government department on the Rand has been spending his holiday trying his fortune on the Droogveld area, part of the estate of the New Vaal River Diamond Company, and is reported to have made a few hundreds within about ten weeks. Last Saturday, while workers on his behalf were finishing up the claim, a stone was found weighing 100 carats, for which £1,750 was received.

New Vaal River Company.

On February 28 the total sales on the New Vaal River Company's estate at Sydney-on-Vaal amounted to 326¼ carats, valued at £3,464 15s., among which were the following stones: One 10 carat, £300; one 6¼ carat, £140; one 45¾ carat, £230; one 16 carat, £465; one 10½ carat, £180; one 36 carat, £465. On March 7 the total sales amounted to 267 carats, valued at £4,422, among which were the following: One 100 carat, £1,750; one 28 carat, £952; one 10¼ carat, £250; one 13 carat, £300; one 7 carat, £205, and one 7¼ carat, £200.

Monteleo Diamonds.

The secretary of the Monteleo Diamond Company reports the following results of the washing operations at the mine during the past six weeks, ending 28th February:—Blue ground washed, 2,623 loads; diamonds recovered, 451¼ carats; average yield, 17.19 carats per 100 loads; lumps washed, 456 loads; diamonds recovered, 40¼ carats; average yield, 8.77 carats per 100 loads. In addition to the above 70½ carats of diamonds were previously recovered from seconds sortings. Total diamonds recovered, 562 carats of good quality. Reef hauled, 9,040 loads. In the early part of the period dealt with there were many stoppages in "washing," due to heavy rains, and to alterations and repairs to machinery, also to the installation and trial runs of the "Burden" machines. The very strong influx of water in the mine at the present level—125 feet—has become a serious difficulty, as the pumping plant now in use is not sufficiently powerful to cope with the quantity encountered, and it will be now necessary to increase this plant.

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Notes and News.

Village Deep Ventilation.

The Village Deep Company intends installing a new Sirocco fan on its 16th level with a view to improving the ventilation of that property.

* * * *

Messina Development.

We understand that the Messina Company is sinking its shaft down to 1,600 feet, and has an ambitious development programme in view.

* * * *

Makganyene Diamonds.

Washing results at the Makganyene Diamond Mine, which lies about 140 miles to the west of Kimberley, have been interfered with by heavy rains, but we learn that the two pans are now at work, and the finds of diamonds are stated to be quite up to expectations and of magnificent quality.

* * * *

Far South-East Rand.

The latest assays of the Far East Rand (South) G.M. Syndicate, Ltd., are as follows:—No. 1 shaft at 150 feet: Sample No. 1 over 25 inches, 12.2 dwts.; sample No. 2 over 14 inches, 12.3 dwts.; sample No. 3 over 14 inches, 9.3 dwts.; sample No. 4 over 25 inches, 6.6 dwts. Drive (west): Sample No. 5 over 12 inches, 21.4 dwts. These samples were taken from the syndicate's workings on the farm Wilgepoort, in the Balfour area.

* * * *

How to Assist Prospectors.

One of the ways in which Governments can assist in the development of our mineral resources is that of preparing maps and reports that will be used by prospectors. During the past summer the Ontario Bureau of Mines, according to the *Canadian Mining Journal*, has had men in the field mapping an undeveloped area near Lake Abitibi. When prospectors go into this area next summer they will be able to take with them geological maps and reports that will enable them to spend their time to the best advantage. The example might well be followed in South Africa.

* * * *

Alluvial in the North-Eastern Transvaal.

A Lydenburg correspondent writes us that there is a lot of new work going on in the Pilgrims Rest and Lydenburg areas at present. He expresses the opinion that there is likely to be a rush for claims on the farm Ceylon, "as some good alluvial has been found on it and it is being thrown open for pegging next month."

* * * *

Rhodesia Exploration.

Several interesting questions were dealt with at the first annual meeting of the Rhodesia Exploration Co., Ltd., held in London in mail week, ranging from the great potentialities of the Eastern Rand to the ranching possibilities of Rhodesia, in both of which the company is concerned. Of considerable general interest was a full statement of the company's justification for its pending appeal in the House of Lords against the decisions given in favour of the Globe and Phoenix Co. in the famous Phoenix Reef case when heard in the lower Courts. The new fact was the summary of an opinion by Judge Lindley, claimed to be the leading authority on American mining law, expressing the view that "the standing judgments of the highest Court of law in America, namely, the United States Supreme Court, were wholly in favour of our (the Rhodesia Exploration Co.'s) case." The Rhodesian mining laws are, of course, mainly founded on the American and not British ones. An unusual occurrence at the conclusion of the meeting was the passing of a resolution, at the instance of a shareholder, protesting against the Treasury's continued refusal to sanction the reconstruction carried out last year of the old Amalgamated Properties of Rhodesia Co., and thus preventing dealings in the Stock Exchange in the new Rhodesia Exploration shares.

Chamber of Mines Changes.

It is understood that the Transvaal Chamber of Mines contemplates a change in its housing accommodation, with a view to bringing under one roof the various co-operative organisations associated with it. A site has been purchased at the corner of Main and Holland Streets facing the Stock Exchange on the one side, and the General Mining Buildings on the other. A five-storey building will be erected, giving ample accommodation for the Council Chamber and its various activities. The building in Market Street, which has so many historic associations, dating back almost to the beginning of the Rand gold mining industry, has been sold, and the move to Main Street will certainly make for greater quietness and less interruption from street noises during proceedings in the Chamber.

* * * *

Institution of Electrical Engineers.

Mr. W. Elsdon Dew, chief mechanical and electrical engineer of the Central Mining/Rand Mines group, has accepted the local secretaryship of the Institution of Electrical Engineers rendered vacant by the death of the late Mr. J. Hubert Davies. The Institution of Electrical Engineers is, of course, the well-known British organisation, and must not be confused with the South African Institute of Electrical Engineers, of which Mr. Du Pasquier is president this year and Mr. Clarkson secretary.

* * * *

Koodoo Diamonds.

The latest diamond venture to make its appearance on the Johannesburg Stock Exchange is the Koodoo Diamond Mining Syndicate, Ltd., registered in the Free State on August 23 last. Of the issued capital of £4,500 the vendors take £3,000 in shares, leaving £1,500 in 10s. shares for working capital. The directors are Messrs. H. J. Rogaly, F. J. Bruns and S. J. Davidson, who is also secretary. The property consists of the prospecting rights over 2,500 morgen of the farm Uitkyk, C.P., of which two years and three months have still to run. Negotiations for the adjoining property are said to be nearly complete. Washing operations will begin in about a fortnight. The syndicate has about £600 cash in hand. A further £1,500 of unissued working capital has been privately applied for, and will be issued at the discretion of the directors. £1,000 in reserve shares of 10s. each are at the option of the subscribers at 15s. per share at the rate of one share for every three shares held by them. This option will expire on August 23, 1919, or within three months of the discovery of a payable mine, whichever shall be the later date.

* * * *

The "Safety First" Movement.

The British Industrial "Safety First" Association, in a circular just issued, states as evidence of the necessity which exists for immediate action, that the latest published returns show that in 1914 969 persons were killed, and 147,045 were injured by accidents in workshops and factories alone, a large proportion of which would undoubtedly have been prevented had those who became casualties been educated in matters pertaining to their own safety. Millions of pounds paid in compensation, and huge sums of money lost to workers as wages, might have been saved. Many of the largest firms and trade unions in the country, the circular says, are actively supporting the "Safety First" movement, and it is hoped to proceed at once with the preparation of "Safety" notices and literature specially suited for individual industries. What consistent safety work really means is well illustrated by the records of the American railways. During the seven years ended June, 1916, there has been a steady decrease in the number of men killed and injured while on duty. In 1910, on the railway roads of the United States, 2.17 were killed out of every thousand, while in 1916 only 1.17 were the number of employees killed per thousand. In 1910 47.1 employees were injured per thousand, while the figures for 1916 were only 25.2. But the record of the United States Steel Corporation is surely one that should dispel all doubt as to the efficiency of safety work. According to the records of the Sixth Safety Congress of the National Safety Council of America, this Corporation by its safety work has saved 14,967 of its employees from death or serious injury, the injury rate for 1906 being used as a basis and comparing subsequent yearly records therewith, and including as injury

cases where more than 35 days' time was lost from work. In other words, the accident rate of the subsidiary companies of the Corporation has been reduced by 40 per cent., while the saving in casualty expense over expenditure for safety exceeds 35 per cent., despite the fact that bonuses to injured workmen during that period were materially increased. This record makes it abundantly clear that safety work pays. The remarkably successful results achieved by the work of the National Safety Council since the commencement of accident prevention by Safety First principles is clearly proved by the experience of the companies who have adopted the scheme, amongst which may be quoted:—Percentage decrease in accidents: The American Smelting and Refining Co., 21; The Commonwealth Steel Co., 69; The Illinois Steel Co., 85; The Inland Steel Co., 35; The International Harvester Co., 88; The Milwaukee Coal and Gas Co., 83. In South Africa, only the mines of the Rand appear to have grasped the importance of the subject, but doubtless other industries will soon awaken to its advantages.

* * * *

Messina (Transvaal) Development.

Owing to a considerably reduced output, difficulty in shipping its copper concentrates and a lower average price secured for them, the Messina (Transvaal) Development Co., Ltd., reports a very heavy falling-off in profits for the year ended June 30 last as compared with 1916-17, namely, £25,200, against £278,200. After providing for debenture interest and South African taxation, £35,000 was applied to redemption of Debentures, with the result that the carry-forward is reduced to £133,769, as compared with £156,687 brought in. There is still, however, a question to be determined as to the company's liability for excess profits duty prior to the past year. At June last the ore reserves were estimated at: Proved, 67,221 tons of 4.79 per cent. copper; probable, 83,956 tons, 3.48 per cent. copper; and possible, 141,626 tons, 2.8 per cent. copper, making a total of 297,803 tons of 3.45 per cent. copper. Since that time a further 25,000 tons of ore have been opened up mainly in the 14th and 16th levels of the Messina mine and also in the Vogelzang mine. The early outlook for the company is uncertain, for although shipments of copper concentrates to this country are now again permitted the cost of refining them here has risen, while the price of the product has, of course, fallen severely since the armistice.

* * * *

An Aero Union for the Transvaal.

As a result of a meeting of some representatives of British industries allied to flying, brought together by H.M. Trades Commissioner on Tuesday, at which Major Court Treatt and Captain Sutton, of the R.A.F., now in South Africa, were present by invitation, the first steps were taken towards the formation of a central body to consolidate flying interests in the Transvaal, for which the title, Aero Union of the Transvaal, was suggested. It was felt that the time had come to put the matter on an official footing, through a deputation to the Mayor who, it will be remembered, initiated the movement locally by his recent prompt action in securing an aerodrome for Johannesburg. The deputation, which will be made thoroughly representative of Transvaal commercial flying interests, will ask the Mayor to interest himself in the formation of an Aero Union for the Transvaal, to call a public meeting to support his action, and to arrange for a committee to organise a suitable reception for the forthcoming Handley Page Cape to Cairo aerial flight on its arrival in the Province. Amongst those present at the preliminary meeting, in addition to the representatives of the Royal Air Force, were H.M. Trades Commissioner, Mr. W. G. Wickham, Mr. F. C. Sturrock, President of the Johannesburg Chamber of Commerce, Major Laughton, Col. Dawson Squibb, and Messrs. Callow (of Bartle & Co., Ltd.), H. Alers Hankey, A. H. Bullock, and S. R. Potter. The intention is to limit the initial organisation to the Transvaal in the expectation that the other Provinces will follow suit, and that the whole movement may ultimately be co-ordinated by a chain of affiliated aero organisations throughout the country. A strong deputation representative of commercial, scientific and sporting interests will wait upon the Mayor next Thursday in regard to the matter. In the meanwhile, enquiries may be advanced to the Provisional Secretary, Box 839, Johannesburg.

The Diamond Market.

The market for diamonds in London in mail week appears to have been excellent. The demand from America and, in fact, from all quarters of the globe continues unabated, and very big business has been done. *The Financial News* says: The South-West stones which the Diamond Syndicate marketed were sold in a couple of hours at much enhanced rates; Premier diamonds will be shown about February 1, and for these we hear the demand is also phenomenal. The good business in the rough diamond trade has its counterpart where brilliants are concerned, the sales which were effected during the last ten days being so heavy that cutters have virtually no stock of brilliants and are rushing, consequently, for further supplies. From what we can judge by the reports we receive from Amsterdam and Antwerp, much bigger business at higher rates is anticipated shortly, and the rough article is very firmly held. It is safe to say that further large advances in rates will take place both in the rough and cut article almost immediately.

* * * *

Simmer Deep. Prior Lien Issue Approved.

Meetings of the first and second debenture-holders of Simmer Deep, Ltd., were held at the company's London office, 8 Old Jewry, E.C., on January 31, to consider the necessary resolutions sanctioning the creation of £150,000 prior lien stock, £100,000 of which is to be issued as and when required for the company's purposes, and is guaranteed by the Consolidated Gold Fields of South Africa, Ltd., free of charge or commission. The circumstances under which the provision of further funds has become essential in order to carry on the company's operations during the next six months, in the hope that a reduction of working costs might ensure a resumption of profitable operations, were fully explained by the chairman, Mr. S. Christopherson, who presided at the meeting of first debenture-holders, and by the Earl of Verulam as chairman of the meeting of the second debenture-holders. The resolutions were passed, and the prior lien stock will accordingly be offered for subscription to the first and second debenture-holders in due course.

* * * *

Uses of the Diamond Drill.

Is the diamond drill used enough in underground development on the Rand? With the exception of Cornwall, all the large mining centres of the world make use of the diamond-drill in underground development, according to Mr. J. A. MacVicar, who recently read a paper on the subject of diamond-drilling before the Cornish Institute of Engineers. The drills are used to prove ore in the stopes, to test the continuity of the ore-body in depth, to analyse faulted zones, and as a general controller of the direction of development. The out-of-reach portions of the property are brought within reach and annotated on the plans, because, by the use of the diamond-drill, their mineral content is known. Rule of thumb is thus abolished, and accurate and reliable data are established as a working basis. Without the diamond-drill the author asserts, the lodes or ore-bodies must be developed by the haphazard method of following where they lead, irrespective of values; and if extensive barren areas are met with in the ore-body this section is very apt to be abandoned, even though there be pay ground beyond. . . . When direction of development is controlled by diamond-drilling, it is possible to so arrange matters in the shaft, at the underground stations, and in the surface equipment, for a maximum output at a minimum of operating costs. Further, it is not necessary to continue a stope beyond its known pay areas, neither is it necessary to drift or crosscut into an unpayable section of the mine. Mr. MacVicar contends that "all arguments against drilling fall rather flat when they come down to hard facts," and that "there is no condition that cannot be improved by diamond-drilling."

TOPICS OF THE WEEK.

A SOUTH AFRICAN INDUSTRIAL BOARD.

It would seem that the active opposition of the Federation of Trades to the Government proposal to appoint an Industrial Commission bids fair to be successful. The Federation professes to see no virtue to such a Commission, and the Government is now seriously reconsidering its contemplated action in the matter. The Federation is said to favour the formation of a permanent Industrial Board, so constituted that all prominent industries and important Labour organisations would be represented, which would probably mean a board of twelve or fifteen members. This board would have to make itself familiar with the conditions in all industries, and would have the power immediately to interfere and adjudicate in any dispute between employer and employed. Whether the Government will adopt this suggestion in its entirety or in part remains to be seen. A bigger board, which, after all, would differ in little but name from a standing conference of employers and employed, might satisfy everybody; and the varying needs of the different industries and branches of commerce affected by labour troubles might be relegated to sub-committees of the main body. Even so, a board or conference is an advance on the original idea of a Commission and comparable to the calling together of the present industrial conference in Great Britain without the intermediate step represented by the Whitley Commission. In proposing a Commission, it is only fair to the Government to say that it was merely acquiescing in the demands of some of the accredited leaders of organised labour, and that it could not have anticipated the latest attitude adopted by the Federation of Trades. As far back as January last, the Trades Union Congress at Durban passed a resolution calling on the Government to appoint an Industrial Commission. In his speech on the Budget a few days ago, Mr. Creswell complained that Parliament was not devoting sufficient time to matters affecting the people's welfare, and was not making any attempt to give effect to the aspirations which had grown up during the war. He went on to say that it was the existing system which they on his side attacked, and which required to be scrutinised, and a Commission should be appointed to enquire into it root and branch, and see what changes could be effected which would ensure to each man something like security for the value of his services. Instead, he said, of having a Select Committee, or an afternoon's discussion, the House should insist upon the Government appointing a strong and really conscientious Commission from the national point of view, to ascertain the causes of the present situation, face them fearlessly, and recommend measures to provide a remedy. Three days later the Acting Prime Minister delivered the speech, referred to in our last issue, in which he dealt with the present unrest and promised to appoint the desired Commission. In view of the Durban resolution, and Mr. Creswell's speech, it is strange that the Government's proposal of a Commission should have been turned down by the Federation. The Federation is reported to have declined, for the time being at all events, to co-operate in the scheme. It is explained, in order to obviate misconception, that the Federation does not go so far as to propose to permanently hold aloof, but has resolved to convene a national trades union congress at Bloemfontein on May 5th, with special reference to shorter hours and better conditions, the congress to be representative of all organised workers throughout South Africa. The idea of the executive, it is further explained, is to get all the demands of the different labour organisations submitted to the congress and co-ordinated, so that the Federation will be in a position to submit them with full authority to the Commission, and that any such Commission would be premature until the congress had sat. For our part, we are inclined to deprecate undue insistence upon the question of procedure. Whether the problems of labour be laid before a Board, a Conference or a Commission seems less important than that they should be submitted for settlement to a properly constituted body fully representative of the interests affected. And the sooner that is done the better for all concerned.

SOUTH AFRICA AND KING COAL.—VII.

A Cautious View About the By-Product Question—Power Versus Sulphate of Ammonia, Tar and Benzol—What Vryheid is Doing—Mauritian Capital For South African Coal Enterprises—The Enyati and Bernica Properties.

WHILST most people who have studied the question of producing by-products from South African coal are enthusiastic about the possibilities of such an industry it would not be wise to convey the impression that there is unanimous optimism on the subject. Engineers and chemists who have gone into the problem very thoroughly do not deceive themselves on the point that we have much to learn before we can even begin to think seriously about the more complex ramifications of the by-product industry.

A CAUTIOUS VIEW.

There are, in fact, one or two local chemists who, after a great deal of research work and study of the question both from a scientific and commercial point of view, openly declare that they are by no means optimistic on the question of profitably producing substantial quantities of by-products in the Union. One of these gentlemen gave us the benefit of his views during the week and his opinions are briefly as follows:

"The by-product question has to be considered in close relation to the particular and peculiar conditions of this country," remarked our informant. "Efficient by-product installations cost a very large sum of money, and we are by no means certain of our by-product markets. There certainly are markets for sulphate of ammonia, and perhaps tar and benzol, but we are not yet very well acquainted in this country with the particular requirements of these markets or their profitable volume. There is, however, a large market in the Southern Transvaal for power. The Victoria Falls Power Company convert many thousands of tons of coal into power and sell it profitably, and there is no waste in this operation. But I am quite prepared to admit that in so far as waste coal is concerned, *i.e.*, the products of collieries which are being 'scrapped' to-day, there is a certain field for the conversion of this waste into the more simply obtained by-products. That, I think, admits of no dispute because it is obvious that whatever you can extract from waste is profit, provided the operation is reasonably considered in relation to capital and current expenditure. But I must confess I am a sceptic as to the advantages of working coal purely from a by-product point of view in South Africa at the present time when the cost of installation, the limited market for coke, and the unproven markets in other directions are taken into account. My view is that there is less waste and more profit in converting a ton of coal into electromotive force than in working it with a view to obtaining the limited types of by-products which we are able to extract and profitably sell in this country at the present time."

THE OTHER SIDE OF THE QUESTION.

Opinions such as these are calculated to damp the ardour of some of the more exuberant protagonists of the South African by-product industry. The brief interview reported above was, moreover, conducted with a local chemical engineer who has thorough practical knowledge of his subject and whether his views are right or wrong we have deemed it necessary to give them publicity, so that it shall not be said that we have given space to only one side of the question. In our view, however, the informant quoted above is inclined to be unduly pessimistic. The Natal Ammonium Company are undoubtedly doing very well with their Mount M'Gwibi by-product plant, and although the high figures being obtained for their sulphate of ammonia product are war inflated prices there is no reason for believing that the company will not earn substantial profits when normal conditions are regained.

PROGRESSIVE VRYHEID.

In contradistinction to the pessimistic views expressed above it may be pointed out that we learn from Natal that the future of the by-product industry is regarded most hopefully in that Province. In the Vryheid district a feeling of confidence and optimism is evident not only in regard to by-products but in relation to the general coal industry possibilities of that area. The Vryheid district certainly gives every evidence of prosperity at the present. In addition to the Mount M'Gwibi and Hlobane concerns which are the mainstays of the district, there are two or three undertakings which are opening up in a very profitable manner, but which are not so well known as the propositions alluded to above. In the first place there is the Enyati Colliery, which despatched its first trucks of coal to the coast a few months ago. This colliery has been floated by Mauritian capital through the enterprise of Mr. R. A. Rouillard and Mr. Stafford Mayer. The capital is £150,000 and the whole of the £110,000 found for working capital was provided by the people of Mauritius. It has been estimated that this property contains something like 35 millions of tons of first class coal remarkably free from anthracite content.

THE BERNICA MINE.

Another coal pit in this district which is being developed by Mauritian capital is the Bernica. The Bernica has been opened up as an adit proposition and has been producing various coal products, not the least important of which has been coke. The company possesses 24 coke ovens, and the product, which is stated to be of very high quality, has found a ready market with the Transvaal Blast Furnace Company at Vereeniging.

Zaaiplaats Tin.

The results at the Zaaiplaats Mine for the month of February were as follows: Days run, 24; concentrates won, 53 tons; estimated profit for the month, excluding Government taxes and directors' fees, £2,648 6s.; capital expenditure, £353 18s. 11d.

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THE LYDENBURG GOLD AREAS.

The Fields Optimistically Spoken of—Inexpensive Mining—An Ideal Area for the Small Man—The Timber and Township Questions—Big Developments Anticipated.

Much interesting work is now being carried out in the Lydenburg area, and we are indebted to a well-known mining man who has had considerable experience in Australia as well as in various parts of South Africa, for the following notes on the district, which by the way has now been producing gold for close on half a century. Our informant was most enthusiastic about the Lydenburg fields, particularly in regard to the small man aspect of the district. He expressed the view that the gold reefs of that locality extended over an area as large as the Rand, although the working capital required will not be within 75 per cent. of Johannesburg requirements, owing to most of the lodes being found outcropping up the sides of the hills. "In fact," he continued, "such a perfect field is seldom placed by nature for easy development. Formerly the locating of the Glynn's and Theta zones was considered a difficult matter, but nowadays many miners easily put their pick on to their much-sought-after rich reefs, and within a short time have substantial quantities of ore exposed. This can be seen at the Sabie and Graskop sections, where some dozen promising ventures are ready for development. This I regard as one of the most striking developments within the Union since the Far Eastern Rand discoveries, with the difference that the Lydenburg mines will be smaller, but the percentage of payable ore per acre will perhaps be about equal in both fields. The conditions for 'small men's mines' in the Lydenburg area are favourable indeed. We can now, in fact, say that for the first time in our history we are to have some mines without batteries or cyanide works. I will endeavour to explain. The Chinamen in Australia treat similar soft reef matter with an old-fashioned puddler, which frees the gold from the clay. The sands are then screened down with fine battery sieves, after which the gold is caught in a special simple concentrator, and the concentrates are sent to the smelters. If we take 2 dwts. per ton dirt and concentrate it down by 98 per cent., then the result is highly satisfactory, as 2s. per ton should be recovered under fair conditions over the working costs, from a plant that costs up to about £50. There are of course several elements that call for consideration in connection with this scheme, and the most important is practical experience with the machines, which have been tested here (and have been improved upon), with results that cannot be described as other than highly satisfactory, providing that the necessary experiments have been made by experienced men. A little further improvement in this direction may mean that at last, after a century of failures, the rejuvenation of many of the world's fields will take place. Mining will become cheaper now that the large plantations are maturing, as this is a field that requires much timber. The miles of trees ready for cutting, and now being planted out, mean much for the future. Agriculture has developed hand in hand with mining to no small extent also. Commercially, the Pilgrims Rest district suffers much from the want of a proper township, but this can easily be righted by giving out stands on perpetual leases, minus the mineral rights, which the Transvaal Gold Mining Estates, Ltd., are entitled to. Then perhaps there will be some expansion in trade and prosperity there, but a large town cannot be expected, as the big areas held by some companies are against any great increase of population, although perhaps an agreement could be come to whereby generous *mynpachts* would be granted, and the surplus claims thrown open, or leased out to others. We might then reasonably expect, under sensible industrial conditions, a large increase in mining. There is not much chance for any great change to-day owing to the reasons stated above, but the payable reefs are there, and they are going to be profitably extracted. These fields are as alluring as anything I have seen or heard of in the globe. There will be many blanks over such a big zone

no doubt, but a fair average number of prizes may reasonably be expected. The points to be noted are, the understanding of the geology and the important quiet discoveries now being made, next the opening up of a township, and lastly the plants that can treat these soft ores minus batteries and other expensive machinery."

The Lonely Mine.

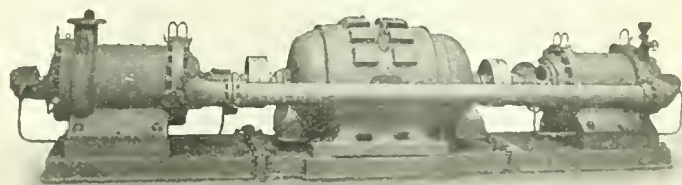
The following are the particulars of the output of gold, etc., from the Lonely Mine for the month of February, 1919:—Mill ran, 608 hours; crushed 1,330 tons; fine gold recovered, 2,042.728 ozs.; value, £8,588 13s. 1d.; slimes treated, 4,330 tons; fine gold recovered, 3,823.135 ozs.; value, £15,077 0s. 3d.; total fine gold, 5,865.863 ozs.; total value, £24,665 13s. 4d.; profit, £14,134 18s.

African Banking Corporation.

A further substantial improvement is shown in the results obtained by the African Banking Corporation in the year to September 30 last. The gross profit, which in the previous twelve months rose from £231,253 to £271,916, advanced to £350,248, and the net profit from £51,869 in 1916 and £79,940 in the following year, improved to £132,007. The dividend, which was raised from 6½ to 7½ per cent. a year ago, is to be advanced to 8 per cent., the reserve is to get £40,000 against £30,000, and the other allocations are to be increased from £3,500 to £33,734, while the carry-forward will be £36,013, in contrast with £28,710. Details of the new share issue guaranteed by Messrs. Barnato Bros. appeared in a recent issue.

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THE GREATER HEIDELBERG GOLDFIELDS.—IV.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

A Journey Through Brakpan and Springs to Nigel—The End of the Legitimate Rand—A Survey Point and Some Reflections—Daggafontein, Springs and Government Areas—The Problem of the Diabases—On the Southern Van Ryn—Outcrop Results and the Deep Level Projects—Mr. Bleloch Asks for an Open Mind—The "Nigel-Van Ryn" Mine—Past Features and a Note on Human Error.

In the preceding articles of this series we have briefly outlined the history of mining enterprises in the Heidelberg areas and have touched on the main features of the geological controversy which centres around the identity of the Main Reef Leader, Van Ryn and Nigel Reefs, and the question whether there is a highly profitable body of auriferous conglomerate which overlies the reef worked in the Nigel properties. We have shown that the great weight of scientific authority is against the dual reef theory, and we have dealt with the fundamental principles of the particular school of geological belief which holds that the Van Ryn is not the Nigel, nor is it the Main Reef Leader,

THROUGH THE HIVES OF INDUSTRY.

It is an education to travel the road through the busy areas of Brakpan and Springs to-day and to observe the multitude of headgears and smoke stacks, mills and giant tailings dumps that have risen with the rapidity of the fabulous beanstalk within the past few years. The golden miles from Kleinfontein to Springs are all linked up to-day by an unbroken chain of industry built up on the golden magnificence of a reef series which is undoubtedly one and the same over this whole area of productivity. Mr. Bleloch has repeatedly stated the fact that the reef which is worked at Kleinfontein is the same as that which is giving handsome profits in Springs Mines. But when Springs is



HOISTING ENGINE AND BOILER: NO. 1 INCLINE SHAFT, SOUTHERN VAN RYN REEF CO.

but that it is to be found over a vast tract of country lying to the east and south-east of the Township of Springs in its true horizon and that development of this geological horizon will appreciably enhance the gold production of the world. We have alluded to the work that is now being conducted in the greater Heidelberg district with a view to demonstrating the truth of this minority view and have pointed the almost illimitable industrial possibilities which would result from substantiation of this belief. We have referred to the entry of three important controlling houses into this area of problems and the earnest need of satisfying the stratigraphical quadratic which Mr. Bleloch and his colleagues have set this country to solve. The enquiry which this paper has undertaken may now be resumed at that point in our chronological investigations where we find the Consolidated Mines Selection as the controllers of Daggafontein, the Consolidated Gold Fields of South Africa identified with the Southern Van Ryn, and the great house of Barnato pledged to the potential value of Spaarwater.

left behind and the headgears of Daggafontein come into sight the controversial area has been entered upon.

THE HALFWAY HOUSE ON THE BROKEN ROAD.

Roughly halfway between the Daggafontein shaft and the Southern Van Ryn property one passes through an agricultural property known as Dearlove's farm. Just to the south of the farm house a conglomerate series has been exposed in a cutting and the excavated debris has been heaped up into a mound. This cutting was made years ago and the conglomerate beds which it exposed are termed by the professors of the new geology the Tatham Reef and are correlated with the conglomerate series upon which a certain amount of work has been done by a company styled the Modderfontein West, which is situated in the Kleinfontein area and has lately been the subject of some comment in a minor *cause célèbre* before a local magistrate.

Others, with a fine show of stratigraphical indifference, consign this reef to the limbo of vague generalities and unchristened nebulae under which so many of our random pebble beds which do not fit into a particular geological hypothesis are grouped. It is not on record that this particular reef is very rich at this point and its existence is not essentially important to a comprehension of these articles. Neither is much information to be gained from the mound of debris. But to stand on this heap of earth is instructive, for it is a halfway house between the end of the so-called "legitimate Rand" and the area of problematical uncertainties. From the mound one can cast one's eyes to the north and see the headgears of Daggafontein, whilst to the south one of the smoke stacks of the Nigel can be clearly viewed. Nearer at hand is the Sub Nigel property and the shallow workings of the Southern Van Ryn. Here one may stand in the middle of the broken link of industry and if possessed of a small degree of imagination it is not difficult to conjure up a vision of smoking stacks and busy headgears which will in time mark the sinuosities of the payable conglomerates and bridge the gulf which separates the present end of the active Far East Rand from the mines of the Nigel-Heidelberg area. The south-east slopes of Springs are, so Mr. Bleloch and his disciples contend, the last workings on Van Ryn Reef on the Far East Rand. Nearly four miles to the east is the Daggafontein property, which, after extensive diamond drilling and shaft sinking, is developing from its No. 1 shaft a reef lying on a shale footwall.

DAGGAFONTEIN SHAFT AND BOREHOLES.

This ore body Mr. Bleloch correlates with the Nigel. Both this No. 1 shaft and the No. 7 borehole, almost on the site of which the shaft was located, are claimed by Mr. Bleloch to have passed through a reef which he terms the Van Ryn but which has apparently been regarded by the management as the Kimberley. It will here be of interest to note the strata disclosed at the shaft and borehole. The sections from the plane of the Black Reef series downwards are as follows. The No. 1 shaft of the Daggafontein G.M. Co. shows: 700-800 ft., Black Reef; 800-1,600 ft., quartzite; 1,600 ft., banket stringer; 1,600-1,750 ft., quartzite; 1,750-2,000 ft., quartzite with banket stringers; 2,000 ft., Kimberley reef, 24 in.; 2,000-2,120 ft., quartzite; 2,120 ft., Kimberley reef, 26 in.; 2,120-2,400 ft., Kimberley slates; 2,400 ft., bankets, shale and quartzite; 2,400-2,550 ft., diabase and shale; 2,550-2,620 ft., quartzite; 2,620-2,630 ft., shale; 2,630-2,890 ft., diabase; 2,890-2,920 ft., quartzite; 2,920-3,300 ft., diabase; and 3,300-3,580 ft., quartzite; 3,580 ft., bankets, 40 in., lying on slate.

Borehole No. 7: 680-760 ft., Black Reef series; 760-1,800 ft., quartzite with intervening beds of banket; 1,800 ft., shale; 1,800-2,070 ft., quartzite with intervening beds of banket; 2,070 ft., slate and quartzite; 2,120 ft., reef, 7 in., 18 dwts.; 2,120-2,260 ft., slate; 2,260-2,350 ft., diabase; 2,350-2,480 ft., slate; 2,480-2,520 ft., quartzite and banket; 2,520-2,530 ft., slate; 2,530-2,620 ft., quartzite and slaty rock; 2,620-3,100 ft., diabase, quartzite and amygdaloidal diabase; 3,100 ft., reef; 3,110-3,180 ft., quartzite; 3,180-3,200 ft., diabase; 3,200 ft., banket beds; 3,400-3,500 ft., amygdaloidal diabase with intervening band of quartzite; 3,500 ft., banket; 3,560 ft., reef, 6 in., 21 dwts., lying on slate.

SOME POINTS TO BE NOTED.

It will be observed from the foregoing that in the No. 1 shaft the bottom reef was separated by 280 ft. of quartzite from the bottom of the diabase, whereas in the No. 7 borehole, which is not more than 100 ft. away from this shaft, only 60 ft. intervenes between the bottom of the diabase and the lowest reef series which is termed by the management the Main Reef and by Mr. Bleloch the Nigel. In each instance a reef was passed through at approximately 2,100 ft. In the borehole this particular reef assayed 18 dwts. to the ton, but we are not in possession of any records as to the value of this reef where intersected in the shaft. This bed of conglomerates is assigned by the management to the Kimberley series. By Mr. Bleloch it is termed the Van Ryn. At this point it may be as well to admit that the

unprejudiced observer cannot fail to be impressed with the marked difference between the reef exposed on the Daggafontein dump and the reef worked farther to the west by the great Far East Rand mines. With the value of this evidence we shall deal at a later date.

WHAT THE STATE MINES SHAFTS DISCLOSED.

It will also be of interest to summarise the stratigraphical sections of the four shafts of the Modderfontein Government Areas Company, more familiarly known as the State Mines. These sections were compiled from actual data disclosed during shaft sinking under the superintendence of Professor Lawn and are admirable records of the strata pierced. They exhibit in great detail the depths at which the various formations were encountered and passed through, the dips of the strata and the general petrological characters of the pits, and we commend a study of them to those who are interested in this subject of Far East Rand geology and who desire reliable data to work on. Space does not admit of a reproduction of these sections in full detail, but a summary of the outstanding stratigraphical characteristics relative to this article is as under:

No. 1, or North-West, Shaft: Kimberley slates and quartzites, 673-1,066 ft.; quartzite, 1,066-1,391 ft.; amygdaloidal diabase with interbedded quartzite and shale, 1,391-1,522 ft., dip 10 deg. S.; reef carrying traces, 1,533 ft.; Main Reef at 2,397-2,400 ft., on shale.

No. 2, or North-East, Shaft: Kimberley slates and quartzite, 608-956 ft., dip 12 deg. S.; quartzite, 956-1,075 ft.; dyke, 1,075-1,205 ft.; quartzite, 1,205-1,300 ft.; amygdaloidal diabase, 1,300-1,502 ft.; Main Reef, 2,273 ft.

No. 3, or South-West, Shaft: Diabase, 2,343-2,500 ft.; quartzite, 2,500-2,783 ft.; dyke, 2,783-2,796 ft.; quartzite, 2,796-2,865 ft.; diabase, 2,865-2,981 ft.; quartzite, 2,981-3,614 ft.; reef, 3,614 ft.

No. 4, or South-East, Shaft: Bottom Kimberley slates, 2,135 ft.; quartzite, 2,135-2,472 ft.; amygdaloidal diabase, 2,472-2,567 ft.; quartzite, 2,567-3,003 ft.; diabase, talcose schist, with patches of diabase quartz, porphyry and dyke, with veins of porphyritic quartz, 3,003-3,084 ft.; quartzite, 3,084-3,579 ft.; Main Reef, 3,579 ft.

There are certain discrepancies between the horizons of these diabases and their thicknesses as shown in the sections of the four shafts, and also by the Daggafontein shaft and borehole, which will be evident to anyone who cares to give some thought to the foregoing and which will be commented on at a later stage when the subject of the reliability of the amygdaloid as a marker will be considered in greater detail.

SPRINGS AND DAGGAFONTEIN.

For the moment we propose to return to a consideration of the question whether the reef worked in the Government Areas, the Modder Mines, Brakpan and Springs is identical with that reef which the Daggafontein Company is now engaged in developing. The minority school of thought says "No," and one of the arguments advanced by them in support of this negative answer is set forth in their own



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terms as under: The Far East Rand Kimberley Reefs are mostly large pebble reefs, some of great thickness, up to 26 ft., and the lowest reef of the series is about 150 to 200 ft. from the Kimberley shales (No. 1 on plan). This series has been intersected in all the boreholes and shafts on the Far East Rand, which have struck the Van Ryn Reef at 2,500 ft. or deeper. The Van Ryn Reef lies at the base of a quartzite formation containing only small pebble blankets—the Chimes series and some stringers. The Van Ryn Reef lies near or on the Van Ryn footwall shales. The Nigel Reef lies at the next shale contact about 600 ft. below the base of the Van Ryn shales, that is disregarding intrusive sills of igneous matter. The plane of the Van Ryn Reef is Springs Mines, as shown in the eastern drives of that mine, is rising at nine degrees to the south or south-east. Assuming, however, an average rise of only 5 degrees from the end of the Springs Mines south incline to No. 7 borehole near the No. 1 shaft Daggafontein, the rise in that distance would be 1,846 ft. (the distance between No. 7 borehole Daggafontein and the end of the Springs Mines south incline is approximately four miles). The reef at the contact of the upper shale in that borehole No. 7 Daggafontein—the Van Ryn Reef—was struck at 2,102 ft. Adding to 2,102 the 1,846, which at 5 degrees inclination and four miles on the dip would be the additional vertical depth of the reef, we have 3,948 ft., or very nearly what is known to be the depth at the end of the south incline in Springs Mines, that is near the position of the No. 3 shaft, and at that position the Nigel Reef now being developed in Daggafontein Mine, would be found about 1,500 ft. lower, or at a depth of, say, 5,350 to 5,500 ft. The sections show that the sub-outcrops of the Far East Rand Kimberley beds come to the sub-surface below the dolomite west of the position of the No. 7 borehole, Daggafontein. That is to say, these beds were eroded in this eastern area of Daggafontein before the deposition of the dolomite. The reef at 2,102 ft. in No. 7 borehole, Daggafontein (the Van Ryn Reef), lies at the contact of the important shale bed lying below (the Van Ryn shale). At the contact of the Kimberley beds with their underlying shales no such reef has ever been found in any of the numerous shafts and boreholes which have been put down on the Far East Rand through these beds to the Van Ryn Reef. The reef (Van Ryn) at 2,102 ft. in the No. 7 borehole, Daggafontein, assayed 18 dwts. over 7 inches. At 3,561 ft. in No. 7 borehole, Daggafontein, another reef was struck also at the contact with an underlying shale. This reef (the Nigel) assayed 21 dwts. over 6 in., and is now being developed in the Daggafontein Mine. This reef is identical in its material pebbles, matrix and gold with the Nigel Reef, mined in the Nigel and Sub Nigel Mines, and is quite dissimilar to the Van Ryn Reef mined in Springs Mines, Government Areas, Brakpan, Van Ryn Deep, New Modder, Modder B. and the other mines on the Van Ryn Reef of the Far East Rand. The Van Ryn Reef mined in these mines is, however, identical in its material—pebbles, matrix, etc.—with the reef which lies

above the Nigel Reef: At a depth of 2,102 ft., Daggafontein borehole No. 7; at a depth of 996 ft., Southern Van Ryn borehole No. 7; at a depth of 617 ft., Southern Van Ryn borehole No. 1; at a depth of 217 ft., Southern Van Ryn H. N. shaft; where it outcrops on the Sub Nigel and further south; where it outcrops on Tulipvale and the town lands of Heidelberg; where it outcrops on Malanskraal and Wilgepoort, Daspoot and Rooiwal in the south-eastern outlying synclinal area containing the beds of the Far East Rand. These facts clearly show that the Far East Rand and its extensions contain two payable gold-bearing reefs, viz., the Van Ryn and the Nigel, the upper (that is, the Van Ryn) lying about at from 1,000 to 1,400 feet above the lower (that is the Nigel).

The linking up of the underground workings of Springs and Daggafontein will take a very considerable time in view of the distances involved, and not until then will there be a solution based on actual drives, winzes and raises which will solve the problem in a manner that must be convincing to the champions of both faiths. But Mr. Bleloch and his supporters contend that we have the very strongest of presumptive evidence if not actual proof of the accuracy of the new geology in the Daggafontein shafts and boreholes and in the work done to the south and south east of Daggafontein.

SOUTHERN VAN RYN DEVELOPMENTS.

Immediately south of Daggafontein lies the triangular shaped farm Vogelstruisbult of the Rand Mines and Consolidated Gold Fields, into which Vlakfontein of the Lydenburg Gold Farms intrudes. To the west of the Vogelstruisbult is Vlakfontein of the Lace Proprietary Mines, and immediately south is Grootfontein of the Consolidated Gold Fields and the farm Varkensfontein, on the northern portion of which the Southern Van Ryn Reef G.M. Co.'s property, whilst the southern portion is held by the Sub Nigel and Nigel G.M. Cos. Previously to the acquisition of the Southern Van Ryn by the Gold Fields, a considerable amount of preliminary development work was done. The report of the manager for the period ended with October 31st, 1917, stated "that considerable prospecting in the shape of boreholes and shafts had been done on the property previous to my taking charge, and data appertaining to work that was done on the property some twenty or more years ago have been found. I refer to the Henderson shaft, which is situated on this property, close to its southern boundary. We now have information to the effect that a reef of 18 ft. in thickness and assaying $5\frac{1}{2}$ dwts/ft was encountered in this shaft at a depth of 200 feet. Of course, in those days these values were not considered payable, and no one would think of working them, but it is a very different matter to-day; this reef could be worked now and a very decent profit made from it. Eight boreholes in all have been put down on this property in various places, ranging in depth from 122 feet to 1,600 feet. Five of these boreholes have intersected the pay reefs—Nigel and Van Ryn—and gone into their respective footwall shales. Four prospecting shafts have been sunk to the sub-outcrop of the Nigel Reef, and in every instance the reef was located at 60 feet from the surface, or less. No. 1 shaft was sunk to a depth of 77 feet; at 60 feet the reef was intersected, dipping at 65 deg. A crosscut to pick up the hanging leader was then started to the west; this leader was intersected at a distance of 30 feet; work was then stopped in this shaft. No. 1 main shaft on the Nigel Reef is located 100 feet south of No. 3 prospect shaft, dipping at 62 deg., and should encounter the reef at a depth of 69 feet. It is a three-compartment shaft (two hauling and one travelling); it is down 30 feet, and timbered to within 5 ft. of the bottom. Work here has been very slow during the past month owing to the very heavy rains we have been having.

No. 1 incline shaft was sunk to a depth of 160 feet, and then stopped according to instructions received from the consulting engineer (Mr. C. D. Leslie) of the Consolidated Gold Fields of S.A., Ltd. The reef was intersected in this shaft at 83 feet, the following table giving depth, width and values:—At 83 ft., 9 in. wide, assaying 100 dwt.; 85 ft., 24 in., 250 dwts.; 88 ft., 12 in., 1370 dwts.; 90 ft., 16

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m., 12.50 dwts.; 92 ft., 18 in., 7.50 dwts.; 91 ft., 15 in., 6.20 dwts.; 96 ft., 12 in., 3.75 dwts.; 98 ft., 18 in., 6.30 dwts.; 100 ft., 12 in., 5.40 dwts.; 105 ft., 14 in., 4.39 dwts.; 110 ft., 12 in., 10.00 dwts.; 115 ft., 14 in., 2.54 dwts.; 120 ft., 15 in., 6.04 dwts.; 125 ft., 18 in., 3.10 dwts.; 130 ft., 18 in., 7.45 dwts.; 146 ft., 21 in., 4.99 dwts.; 150 ft., 36 in., 2.07 dwts.; 155 ft., 36 in., 2.17 dwts. No driving was done on the reef in this shaft. Quartz veins were scattered through the reef exposed. These veins decreased the values very considerably, as it was impossible to section the reef without intersecting them; at the same time they were conclusive evidence that the shaft was being sunk in a disturbed zone. That this disturbance is purely local, is shown by the following:—No. 3 prospect shaft, 70 ft. north of No. 1 incline, intersected the reef at a depth of 56 ft.; the reef was 18 in. in width and panned 15 dwts. No. 2 prospect shaft, 400 ft. south of No. 1 incline, intersected a hanging wall leader at 46 feet. The shaft was continued to a depth of 70 ft. on this reef; a crosscut was then driven into the footwall for a distance of 26 ft., when it intersected the lower reef. Both these reefs carried good values, the lower reef giving 10 dwts. over 18 in., and the upper reef 12.5 dwts. over 24 in. Mr. McNeil took samples of the upper reef in this shaft on April 27th, 1917, the following being the assay results: Footwall section, 12 in. wide, 10.5 dwts.; hanging wall section, 12 in. wide, 11.2 dwts."

THE DEEP LEVEL PROJECT.

Since the assumption of the technical control of the company by the Consolidated Gold Fields no further work has been conducted in the shafts referred to above and the present operations on the property are confined to the sinking of a deep level shaft which, according to the plans of the Gold Fields' engineers, will cut the Nigel Reef at a depth of 3,000 ft. or more. The Gold Fields apparently are disciples of the orthodox school of thought. Their technical advisers do not or have not yet recognised the claims of the two reef theory, and accordingly the No. 1 incline shaft which certainly was in auriferous conglomerate at its lowest depth and had been in ore from 83 ft. downwards was closed down, much to the disappointment of the original and present shareholders. The values disclosed in that shaft did not make a New Modderfontein of the Southern Van Ryn. But they indicate a gold content on the basis of inch-dwts. which is comparable with values obtained elsewhere at certain important mines of the Far East Rand during what may be termed the "off season" of development. Moreover, they were outcrop assays obtained at a minimum of expenditure, and those who watched with almost paternal interest each new length of rail laid in the little shaft do not view the monster and costly project of the orthodox school with too much favour. But Mr. Bleloch has not shown active opposition to the deep level undertaking on the grounds that he is entitled to consider that Mr. Leslie has an open mind on the subject of the two reefs. The deep shaft Mr. Bleloch contends must cut the richer and overlying series before it probes to the depths where the Nigel may be encountered, and then *nous verrons*. It is at any rate to be hoped that if a reef series is intersected at the horizon assumed by Mr. Bleloch the conglomerate beds in question will be thoroughly tested. This country is not so rich that it can

afford to scorn the presence of gold-bearing reefs, no matter what their controversial nomenclature may be, and if the deep level shaft in its journey down to 4,000 feet intersects values nearer home it will surely be a matter of congratulation rather than for academic slander and the revival of the controversy with all its acid bitterness and basic dogmatism.

THE NIGEL-VAN RYN MINE.

In contradistinction to the costly programme upon which the Southern Van Ryn has been embarked it is interesting to travel a mile or two to the east and view the attempts which are being made at the Nigel Van Ryn property of 257 claims to establish an outcrop proposition on a portion of the old Marievale Nigel claims. The Nigel Van Ryn is a subsidiary of the defunct Vaal River Gold Estates, now known as the South-East Rand Investment Company. Here again the nomenclature appears to be a little mixed, so it may be as well to explain that this Nigel-Van Ryn mine is a property which has been re-opened and on which a stamp battery (removed from Klerksdorp) is lying and awaiting erection.

PAST RECORDS AND A WORD ON HUMAN ERROR.

The incline shaft has been sunk to a depth of 217 ft., and the drives on the first level have been re-opened in ore which is assigned to the Nigel horizon. To the south of this property the line of the Nigel Reef swings around to the south-west as shown by the old workings of the Rand Nigel, a subsidiary shaft of the Nigel and the Henderson Nigel. Years ago, too, the East Nigel sought fame and riches with a ten stamp battery in this area. But the true records of that concern are wrapped in the mists of long ago. We find it recorded of this company, however, in the *S.A. Mining Journal* just 22 years ago "that the assays have been striking but the development has only ended in liquidation," and an expression of opinion that "if the Nigel Reef is found there it is broken by intrusive rock and not by any means continuous." This remark is apparently based on the fact that in the past development was carried out not on the Reef but on a dyke contact. Under the present management the Reef has been picked up and is now being developed, but before the Nigel-Van Ryn commences crushing it would be well to see a good deal further ahead than at present. But it is an interesting little undertaking and if only it demonstrates the vast difference between the experience of the Nigel mines and the experience of the great propositions of the Far East Rand its mention in these articles will not have been in vain. We admit the possibility of faulty management in the 'nineties and of past mistakes. "The Christs alone no errors made" has been truly written by one of the best known of modern poets. There is no reference to mining engineers or even geologists in that line, so that it is not perhaps unduly presumptuous to imagine that they are excluded from the absolute circle of Buddha and Confucius. But to come back to hard basal facts and undenuded truths. Our survey has now carried us up to the borders of the Sub Nigel, and in the next article we propose to pass through that little mining hamlet and on to salubrious Heidelberg with its numerous activities and busy searchers after the commercial truth of the two reef thesis.

(To be continued.)

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THREE SEAS BRAND.

CROWN DIAMONDS COMPANY INCREASING ITS CAPITAL.

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Satisfactory Disclosures of Blue Ground in the Drives—A much Improved Outlook.

THE shares of the Crown Diamond Mining and Exploration Company, Ltd., have witnessed a substantial advance in price on the local market during the past week, and considerable attention has been directed to this concern, which, as is generally known, is a rejuvenation of the old Lace Diamond Mine. The property of the company comprises the freehold farms Driekopjes No. 630 and Ruby No. 961, both situated in the Kroonstad district, O.F.S. Province, of a combined area of 2,335 morgen 118 square rods. Recent operations have been much hampered by the fact that the company has a considerable debt and it is important to note that it is now proposed to increase the capital to £250,000, of which £20,000 will be allocated to reserve. The new shares are being guaranteed by Messrs. Lewis & Marks at par, and the capital provided by the new issue will be sufficient to liquidate existing liabilities and put the company on a sound financial basis. The outstanding feature of recent developments has been the continued disclosure of satisfactory blue ground in the drives which have been pushed out in four directions from a shaft which has been sunk to a depth of 300 feet from the 140 ft. level. In this connection it may be recalled that Mr. Emrys Evans, presiding at the last annual meeting of the company, said: "You will have gathered from the directors' report now before you that certain prospecting operations have recently been carried out at your mine, as a result of which an important discovery of blue ground has been made. Boring

operations have clearly established the existence of a body of what is considered to be very good quality blue, which is apparently free from the intrusion of reef matter. It remains, however, to be seen what the diamondiferous contents of this new body of blue ground are, and to what extent it occurs. Past working results have clearly established the fact that large quantities of reef and other foreign matter have been mixed with the ground sent to the washing machines. A reference to the manager's report for the year 1913, at which time operations were discontinued, shows that of a total of 145,128 loads hauled no less than 55,145 were reef, and of no value whatsoever. You will appreciate that the handling of so large a proportion of unprofitable ground had a most undesirable effect in swelling the working costs, and probably was also a factor in reducing the average yield on account of the inability to entirely separate such matter from the ground passed through the washing plant. Even under these conditions, the yield per 100 loads obtained during that year averages 10.09 carats of diamonds." Since these remarks were made the price of diamonds has improved materially, and this in conjunction with the facts that work in the shaft and drives has abundantly confirmed the disclosures made in the preliminary prospecting by boreholes and that satisfactory arrangements have been made for the future financing of the company suggests that a new era of activity and prosperity has arisen for this concern.

MINING MEN AND MATTERS.

Mr. Alex. Aiken has left for England.

* * * *

Professor J. H. Lawn is on a visit to the Rand from London.

* * * *

Mr. A. D. Newman, of the Barnato Group, has sailed for England.

* * * *

Mr. Bailey Southwell, who has held a commission in the Royal Engineers in France, has returned to the Rand.

* * * *

Mr. T. H. Baildon, until recently underground manager of the Village Deep, has been appointed manager of the Bush Tick Mine, Essexvale, Matabeleland.

* * * *

Mr. G. G. Hewitt, underground manager of the Leeuwpoot Tin Mine, has returned from active service in France. Mr. Hewitt held a commission in the Royal Engineers.

* * * *

Mr. Carl Davis is taking the place of Mr. C. E. Knecht with the Consolidated Mines Selection Group. Mr. H. W. Pridgeon is manager of Springs, and Mr. Bushell has gone to Daggafontein.

* * * *

The new technical organisation of the Crown Mines, Ltd., includes Mr. Beaumont and Mr. Lange as sectional managers under the recently appointed new General Manager, Mr. A. J. Walton.

* * * *

Major Reginald Oscar Schwartz, K.R.R.C., of Palmerston House, Old Broad Street, London, E.C., who played cricket for South Africa and Rugby football for England, at the outbreak of war a member of the London Stock Exchange, who died from influenza on 18th November in France, aged 43, has left property of the value of £23,118. The deceased left £500 to his office staff in such shares as the executor may appoint. One of the witnesses to the will is Sir Abe Bailey.

Mr. E. Birkenruth, of the Consolidated Gold Fields, is returning to South Africa.

* * * *

Mr. Arnold Bradley, A.I.M.M., has been appointed Deputy Controller of Mines for German East Africa.

* * * *

Professor Yates has just been notified that his brother, Mr. Arthur Yates, formerly well known on the Rand, has been released from his duties as an Assistant Controller of Mineral Output in Great Britain, and has resumed his duties as Lecturer on Mining at the Royal School of Mines, London.

* * * *

Mr. H. T. Dickinson, of De Beers, has returned to Kimberley after a long absence in Europe on war service under the Ministry of Munitions, and has been cordially greeted by his many friends.

* * * *

In the course of a letter, Lieut. Stanley Nettleton, R.E., formerly of the Geduld, and late of the 176th Tunnelling Company, and now of the Maltese Mining Company, B.E.F., Italy, writes: "In almost every Tunnelling Company on the Western Front were officers and men from South Africa."

* * * *

The annual general meeting of the Geological Society of South Africa was held in the Chamber of Mines, Johannesburg, last Monday evening. The presidential address was delivered by Mr. H. B. Maule, the Director of Geological Survey of Southern Rhodesia. Mr. G. Jervis Garrard was elected as the new President, with Messrs. W. G. Holford, T. N. Leslie and H. B. Maule as Vice-Presidents. Dr. R. B. Young was appointed Hon. Secretary and Treasurer. The Auditor (Mr. Chas. Stuart) was re-elected. The following were elected to the Council: Messrs. P. Ross Frames, J. J. Garrard, W. J. Gau, C. J. Gray, W. G. Holford, Dr. P. A. Wagner, T. N. Leslie, D. P. Macdonald, A. R. Sawyer, E. R. Schoch, S. J. Shand, and L. C. de Villiers.

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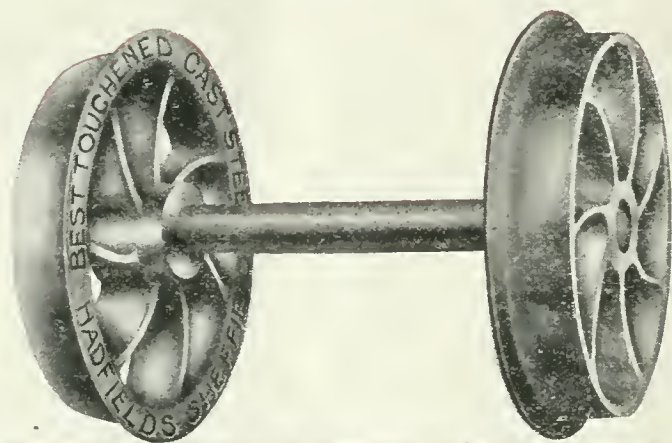
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THE FUTURE OF THE GELDENHUIS DEEP.

THE report of Mr. E. H. Clifford, consulting engineer to the Geldenhuis Deep, on the operations of the company for the year ended 31st December, 1918, is not very cheerful. The following table shows the important features of the year's work, together with those of the two previous years:

	1916.	1917.	1918.
Tonnage milled	696,300	648,400	591,100
Total revenue	£886,728	£772,255	£684,688
Total expenditure	£717,250	£675,551	£683,180
Total profit	£169,478	£96,704	£1,208
Revenue per ton milled ...	25s. 5d.	23s. 10d.	23s. 2d.
Working costs per ton milled ...	20s. 7d.	20s. 10d.	23s. 1-5d.
Profit per ton milled ...	4s. 10d.	3s. 6d.	0 5d.
Development footage ...	16,147	13,866	11,520
Ore reserve—tons ...	1,616,000	1,811,000	1,549,600
Value of ore reserve—dwts.	5-9	5-8	5-9
Native labour strength—average ...	5,017	4,351	4,143

"The year's working," says Mr. Clifford, "has been attended with most unsatisfactory results in every respect, due in the first instance to an increase in the cost of operating the mine, from £675,551 for 1917 to £683,180 for the year under review, to a further decrease in the tonnage milled resulting from shortage of native labour, and to the

influenza epidemic during September and October last. The industry as a whole has been subjected to precisely the same difficulties, but their effect on a low grade mine, such as the Geldenhuis Deep, is disastrous. There has also been a small decrease in the revenue per ton milled. The ore reserves as at 31st December, 1918, were as follows: Main Reef, 593,400 tons, value 5-4 dwts.; Main Reef Leader, 231,200 tons, value 6-1 dwts.; South Reef, 173,900 tons, value 6-5 dwts.; composite reefs, 251,100 tons, value 6-0 dwts.; total, 1,549,600 tons, value 5-9 dwts. Of the above, 136,100 tons of a value of 6-1 dwts. are not available for stoping at present. The tonnage in reserve is less by 261,400 tons, the value being slightly higher. This shortfall is chiefly due to the fact that we have not been able to develop sufficient ore during the year to make up for the quantity mined. The future of the mine cannot be described as very promising. The development of the eastern section is nearly complete, but in the western section there is a considerable area remaining to be opened up. A considerable expenditure will be necessary for this purpose, but the tonnage of payable ore that can be expected is not large. It is probable that there will be a slight recovery in the revenue per ton, but this will not affect the situation materially in the absence of an improvement in the labour supply. The most important condition for the profitable working of the mine is a steady labour supply of about 5,000 native labourers."

SERIOUS DECLINE IN ROSE DEEP PROFITS.

THE report of Mr. E. H. Clifford, consulting engineer to the Rose Deep, on the operations of the company for the year ended 31st December, 1918, includes the following table comparing the leading features of the year's work with those of the two previous years:—

	1916.	1917.	1918.
Tons milled	784,600	685,900	616,900
Total revenue	£900,148	£837,991	£709,236
Total expenditure	£677,226	£579,079	£569,423
Total profit	£222,922	£258,912	£139,813
Revenue per ton milled..	22s. 11d.	24s. 5d.	23s. 0d.
Work. costs p. ton milled	17s. 3d.	16s. 11d.	18s. 6d.
Profit per ton milled ...	5s. 8d.	7s. 6d.	4s. 6d.
Development footage ...	10,464	7,190	5,112
Ore reserve—tons	3,267,280	3,219,700	2,909,520
Ore reserve—value	5-3 dwts.	5-1 dwts.	5-3 dwts.
Native labour strength—average	4,937	3,803	3,405

Mr. Clifford says: "I regret to have to record a very serious decline of £119,099 in the profit earned during the year. This was chiefly due to causes which have affected the industry generally, namely, the increase in the cost of white labour and stores, the extreme shortage of native labour, and the influenza epidemic, which seriously disorganised the work of the mine during September and October last. On the revenue side there was also a decline of 1s. 5d. per ton. The ore reserves as at 31st December, 1918, were as follows: Main Reef, 1,129,690 tons, value 5-5 dwts.; Main Reef Leader, 93,230 tons, value 5-3 dwts.; Main Reef Leader and Bastard, 629,620 tons, value 5-3 dwts.; South Reef and Main Reef Leader, 269,790 tons, value 5-1 dwts.; South Reef, 787,190 tons, value 5-3 dwts.; total, 2,909,520 tons, value 5-3 dwts. The value is practically the same as it has been for several years past, but the tonnage is lower than last year to the extent of 310,180 tons, due chiefly to the fact that the quantity of ore developed during the year was considerably less than the amount mined. Sandfilling has been continued on a large scale throughout the year, and the underground workings generally are now in good condition. It is not expected that there will be a further decline

in the revenue per ton. Indeed, it is quite possible that some improvement on last years' figure may come about, but the most important condition for the more profitable working of the mine is an improvement in the native labour supply."

PATENTS FOR SALE OR LICENSE.

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- 248 17 For Improvements in Governing Devices for Plunger Pumps.
- 315 17 For Improvements in Expansion Valve Gears for Duplex Steam Pumps.
- 316 17 For Improvements in Expansion Valve Gears for Simplex Steam Pumps.
- 367 17 For Improvements in Packing for Stuffing Boxes or Pistons.

The proprietor of the above patents desires to make arrangements to meet the requirements of the public for the inventions, and for that purpose to grant Licences under the Patents, or to sell the Patents on reasonable terms.

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- 357 17 For Improvements in Turbine Centrifugal Pumps.

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GEOLOGICAL SOCIETY OF SOUTH AFRICA: PRESIDENTIAL ADDRESS.

Progress in Elucidating the Geological History of Southern Rhodesia.

The twenty-third annual general meeting of the Geological Society of South Africa was held in the Council Chamber of the Chamber of Mines, Johannesburg, on Monday, March 17th, at 8.15 p.m. Mr. H. B. Maufe, Director of the Geological Survey of Southern Rhodesia, President of the Society, presided over a good attendance. In moving the adoption of the report and accounts for the year ending 31st December, 1918, the President referred to the heavy losses by death which the Society had sustained during the past year. The report and accounts were unanimously adopted. Mr. Maufe then delivered his presidential address. The address summarized the advances that have been made in the last few years in elucidating the geological history of Southern Rhodesia. The oldest rocks known are crystalline schists which have been invaded by immense batholiths of gneissic granite, which seem to be continuous across the Limpopo River with the older granite of the Transvaal. The crystalline schists of Rhodesia thus correspond to the Swaziland land system in the Union. In Rhodesia they consist mainly of a vast outpouring of basic lavas. Sedimentary rocks, comprising banded ironstone, black phyllites and limestone, are found only in relatively small amount. All these rocks have been considerably metamorphosed and seem to occupy synclinal troughs, as if they have "sagged" down between the rising domes of granite. Another group of metamorphosed intrusions of earlier age than the granite consists of serpentine and talc-schist, and is the home of the chrysotile asbestos and chrome-iron-ore deposits of the territory. A third group of intrusions younger than the serpentine consists of felsitic rocks which are frequently altered to quartz-sericite-schists. This group is closely associated with the gold quartz reefs, and "schist-reefs." A very thick series of beds consisting mainly of slates and quartzites, but including near its base the dolomite in which the Sinoia Caves are situated, has usually been classified with the crystalline schists, but as it shows a totally different succession and is much less metamorphosed than the schists, it was proposed to separate it and name it the Lomagundi system. It was pointed out that the succession of beds bore many resemblances to that of the Transvaal system, the wide extension of which in the Union had been proved in recent years. The next younger formation appeared to be represented by a series of red, brown and purple quartzites and shales in the Sabi Valley. It was known locally as the Umkondo formation, and it had been correlated with the Waterberg system. The Karroo system in Rhodesia is represented by three facies. That found in the Zambesi basin, though the thickest, embraced only about 1,600 feet of beds. It was shown that it could be divided into three groups, in the lowest of which were two distinct horizons of workable coal; and that the character of the beds indicated a decreasing humidity in the climate. The second or high veld facies consisted of a whitish sandstone overlain by basaltic lavas interstratified with red sandstones of hot desert origin. This facies of Upper Karroo age rested directly on the crystalline rocks and was strictly comparable with the succession found in the Bushveld. The third facies found in the Limpopo valley again contained coal near the base, which was overlain by sandstone and shales, and these in turn by basaltic lavas. The facies, although the Dwyka conglomerate had not been actually proved to occur in Rhodesia, more nearly resembled that of the Transvaal high veld and of the Komati Poort coal-field. After the close of the Karroo period denudation produced a very even peneplain. The deposits of one of the rivers which graded the peneplain are represented by the Somabula gravels which contain the diamond and numerous gemstones. An epoch of desert regime followed, brought about by the extension of Kalahari conditions at least as far east as central Mashonaland. An uplift along a north-east to south-west axis which now forms the main divide of the country now occurred, and was accompanied by a return

to a humid climate. The present rivers, which flow north-west and south-east from the main divide, were originated. They have since removed much of the deposit of the desert epoch, more especially in the east. A short account was then given of more recent changes of climate leading up to the time when palaeolithic man inhabited the country, and concluded with a brief description of the formation of the present soil and subsoil. At the conclusion of his address Mr. Maufe was accorded a hearty vote of thanks for the comprehensive and co-ordinate account of Rhodesian geology contained therein which was a most valuable contribution to the geology of South Africa.

Aircraft Corporation of Africa.

The Aircraft Corporation of Africa, Ltd., was registered in London on January 27 as a private company, with a capital of £600,000 in £1 shares, as manufacturers and repairers of and dealers in aircraft, hangar, shed and aerodrome proprietors, aerial carriers, etc., in Africa. Solicitor: H. P. Beecher, 26 Bedford Row. File number, 152,795.

African Soda and Copper.

A special mail despatch from Mombasa to the *African World* states that the steamer "Clan McPhee" left Kilindi early last month for Chittagong with a cargo of 3,000 tons of soda from Lake Magadi. The special Brussels correspondent of the *African World* states that the new Colonial Minister, M. Frank, has just arranged for all Katanga copper to be shipped in future to Antwerp instead of England.

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A NEW ALKALI DISCOVERY.

Large Efflorescent Deposits in the Ventersdorp District—Sodium Carbonate from Granite Weathering.

Information is now available with regard to the discovery of large alkaline occurrences, containing a high percentage of sodium carbonate, in the Ventersdorp district, says the "S.A. Engineer and Electrical Review." In that neighbourhood the granite outcrop known as the "Ventersdorp Granite Boss" covers a wide extent of country. References have been made to this mass of granite in various geographical papers, notably in one dealing with that region which was read some years ago before the Geological Society of South Africa by Mr. G. C. Holmes. Its boundaries are partly shown, also, in a map which accompanies Dr. Hatch's well-known contribution to the transactions of the same Society on the Geology of the Marico District of the Transvaal. Beyond merely casual references, however, to the existence of this granite boss, which emerges in that particular neighbourhood from beneath a succession of beds belonging to the Lower Witwatersrand, Ventersdorp and Transvaal systems, there are few, if any, data with regard to either the physical or petrographic character of the rock. The Geological Survey of the Transvaal has not yet extended to that part of the country, and prospecting has been carried out either towards the north-east in the search for gold along the Black Reef outcrops, towards the north-west in a quest for a diamond pipe such as is now in progress, or around the southern areas where diamonds are being found in the alluvial deposits of the Vaal River basin. For this reason mainly, no doubt, the alkaline occurrences in the low-lying spruit areas upon the granite boss have been left unobserved, except by the farmers who regard them as a nuisance and a detriment to the productive capacity of their lands.

ALKALINE OCCURRENCES IN SOUTH AFRICA.

The occurrence of alkaline deposits of various kinds in South Africa is fairly common. Leaving out of consideration the now famous deposit in the Salt Pan to the north-west of Pretoria, of which the mode of origin seems to be a matter of much difference of opinion, there are the alkaline or "brak" patches that appear in many parts of the Karroo and South-West Africa, in much the same way as they do in the arid regions of America and China. There are, also, the alkaline brine fountains that make their appearance in several parts of the Pretoria district, and leave a superficial crust on evaporation that is specially noticeable during the winter season. In none of these, with the exception of the Pretoria deposit referred to, is the accumulation of alkaline material sufficiently abundant to be anything more than a matter of scientific interest, and although in the Karroo, as, for instance, near the site of the Smalfontein irrigation scheme on the Vlekpoort River, where the fine clay soil is highly impregnated with alkaline salts, it would be possible to dissolve the alkali from the soil and evaporate it by natural means, the enormous quantity of water necessary to accomplish the operation, and the consequent length of time necessary to effect evaporation would be so great, that the undertaking may be looked upon as quite impracticable. The same may be said of other similar occurrences in the Union. The deposits of alkali which have been taken in hand in the Ventersdorp district, however, come into quite a different category.

THE SCHOON SPRUIT OCCURRENCES.

The Schoon Spruit takes its rise in the dolomite country north of Ventersdorp and runs, replenished by many smaller tributaries, through the granite area which makes its appearance a few miles south of the town and extends south and west towards Klerksdorp and the Harts River. In the valleys and low-lying ground the disintegrated granite has accumulated in large masses and sometimes to a considerable depth. In many places where this accumulation is found

there appears, especially during the dry winter season, extensive patches of an alkaline efflorescence which is shown, by reliable analysis, to contain a high percentage of sodium carbonate. During the summer season, also, whenever the rains are broken by more or less long spells of dry weather, the efflorescence is distinctly in evidence. Although there are not available any analyses or petrographic determinations of the granite itself, there seems no doubt that the alkaline material is due to the decomposition of the felspars with the subsequent solution of their alkaline constituents in underground waters, followed by a steady capillary movement of the solutions to the surface and their evaporation by natural means. Sections of the granite detritus which have been taken by means of boreholes show that the first few inches is usually composed of fairly clean sand, followed by a dark bluish clay, a foot or more in thickness, and then by a mass of material which is apparently granite in an advanced condition of decomposition. Below this, sometimes covered by a thin calcareous crust, comes the harder and less disintegrated granite of the boss itself. In some cases water is found within three or four feet of the surface, in the granite detritus; at others it flows upwards when the calcareous crust is drilled through, and finally in some instances only a small seepage is found at the granite contact. Correspondingly, of course, the detrital material is either saturated with water or merely in a damp state. The whole section has been shown to contain sodium carbonate in solution, and since the quantity of alien matter, such as fragments of diabase, etc., is comparatively small, while the felspar, either in a clayey condition or in easily distinguishable form, is abundant, the conclusions with regard to the process of formation of the alkaline efflorescence, as outlined above, appear to be sound. Subsequent analyses will be made for the purpose of deciding the question.

QUANTITY OF ALKALI AVAILABLE.

From an industrial point of view, the point that is of most importance at the moment is that of the quantity of alkaline material which is likely to be available. No definite data have been obtained with regard to the maximum thickness of the efflorescence, nor as to the areas actually covered by this thickness during the winter season. The statements of reliable observers is to the effect that the deposit attains a height, in places, of as much as five inches, and that this is by no means an unusual measurement. However that may be, it is certain that a thickness of one inch may be relied upon over very large areas, and at this figure the quantity available may be estimated at about 20 short tons

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per acre. Obviously the policy to be adopted, in view of these conditions, is to work over as large areas as possible. As an example of the space covered by individual patches of efflorescence, it may be mentioned that one that came under the writer's observation was approximately 12 acres in extent, and upon what is considered by the local farmers to be the somewhat low thickness of one inch, the quantity of sodium carbonate to be obtained from this patch during an ordinary season should be not less than, say, 250 short tons. There are many such patches as these, and others could doubtless be obtained by clearing the surface of grass, rushes and other rough growth. The treatment of the underlying granitic detritus is not an attractive enterprise as far as the available and rather scanty data are a guide. The very clayey nature of this material would make it difficult to treat without expensive plant, such as that which has

been introduced at the Pretoria Salt Pan. In those cases where artificial leaching or drainage may be carried out, it seems likely that a large quantity of water would be necessary, and, although this could be obtainable at a moderate cost, the problem of dealing with enormous volumes of solution is one that does not seem profitable enough at present. Questions of this kind, however, will be better discussed when more data have been obtained. So far the apparently vast deposits of efflorescent alkali that make their appearance during the winter months, containing sodium carbonate in a clean and easily recoverable condition, are sufficient to meet the demands of the local market and to supply a good deal of that from outside markets. Owing to the approach of the dry season, it is proposed by those concerned to make early preparations for the working of these alkaline deposits upon a large scale.

FEBRUARY RETURNS FROM THE CAPE DIAMOND DIGGINGS.

The following is the official statement of the output of diamonds from the public diggings in the Cape Province during the month of February, 1919:—

BARKLY WEST DISTRICT.			
Area.	No. of Diggers.	Carats.	Value.
Bad Hope	1	11 ¹ / ₄	£8 0 0
Delpont's Hope	27	167 ¹ / ₄	1,801 12 6
Gong Gong	54	282 ¹ / ₄	2,444 17 6
Good Hope	63	247 ³ / ₄	1,604 15 0
Harrisdale	14	65	628 15 0
Hebron	67	274 ³ / ₄	3,039 5 0
Holpan	6	50 ³ / ₄	903 10 0
Karreepan	155	1,178 ¹ / ₄	10,410 12 6
Keiskama	3	9 ³ / ₄	82 2 6
Klipdam	46	187 ¹ / ₄	1,650 2 6
Klipdrift	29	80 ³ / ₄	516 2 6
Last Hope	6	29 ¹ / ₄	324 15 0
Longlands	32	129 ¹ / ₄	1,129 5 0
Niekerk's Rush	9	110 ¹ / ₂	501 0 0
Rickett's Pros.	1	³ / ₄	0 10 0
Scholtz's Pros.	23	86	917 15 0
Snyder's Rush	6	29	165 10 0
Van Zoelen's Laagte	5	11	71 10 0
Waldeck's Plant	46	125 ¹ / ₄	4,660 9 6
Ward's Hope	2	16 ¹ / ₄	211 0 0
Winter's Rush	24	459 ¹ / ₂	6,632 5 0
	619	3,844 ³ / ₄	37,703 11 6

HERBERT DISTRICT.			
Brypael	10	70	774 12 6
Davidsdriif	2	11 ¹ / ₄	231 10 0
Platdrift	2	9 ¹ / ₄	87 10 0
Schmidt's Drift	41	241 ³ / ₄	2,223 10 0
	55	332 ¹ / ₄	3,317 2 6

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Tenders are invited, and will be received by the Chairman of the Union Tender Board, Union Buildings, Pretoria, up till 3 p.m. on the 30th April, 1919, for the supply of tools used in connection with drilling operations, on steam driven percussion drilling machines.
Forms of tender, schedules of requirements, and any further particulars may be obtained upon application to the Director of Irrigation, Union Buildings, Pretoria.

KIMBERLEY DISTRICT.			
Robinson's Kopje	7	29 ³ / ₄	412 0 0
Wedberg	6	24 ³ / ₄	267 7 6
	13	54 ¹ / ₂	679 7 6
TAUNGS DISTRICT.			
Home Rule	133	1,767	17,135 17 6
Killarney	6	19	278 10 0
	139	1,816	17,411 7 6
PRIVATE ESTATES.			
Home Rule, Taungs (Plot-holders 89)	2,428 ¹ / ₄		23,976 10 0
River View Diamond Syndicate	130 ³ / ₄		1,080 17 6
New Vaal River Diamond Synd.	872 ¹ / ₄		8,664 12 6
Pniel Estate	145		1,428 2 6



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THE WEEK IN THE SHAREMARKET.

Business Restricted—Prices Unsettled—Fall of Modder East Options.

AFTER last week's report had gone to press the market sagged considerably on profit-taking, especially in Springs and Modder East. As mentioned previously, the proposed new debenture issue affected adversely the Options. Why, it is difficult to understand, unless those who read the circular are under the impression that they will get the option of one debenture for each hundred shares, whereas the distribution will only be as one to three, and the whole business, both in debentures and options, turns on the success or otherwise of the mine. On Saturday the market was fairly firm, except in the profit-taking stocks. Springs were 2s. 9d. to the bid from their best, and Modder East 1s., and the options from 9d. to 1s. New Modders and Van Ryn Deeps came better, but Modder B. and Deeps had a set-back, as also Geduld Props. The market was restricted on Monday morning, but prices were fairly well maintained, with the exception of Modder B., Modder East and the options. Rand Selections, which had advanced at the close on Saturday to 80s. buyers, changed hands at 85s. 3d. and 85s. for a parcel. By lunch-time they fell to 82s. 6d. sellers. South-Westerns were done at 60s. The only change worth noting at Tuesday's call was an advance of 1s. 9d. in Wit. Deeps. The best bid for Rand Selections was 80s. Modder B. improved and Modder East were weak. At the opening on Wednesday morning Crown Diamonds, which had advanced overnight to 15s., made a further upward move which carried them to 17s. Later on they came back to 16s. 9d. The tone at the call was generally better, the chief advances being in Springs Mines and Pretoria Cements. Other stocks were firm, with an upward inclination. In the forenoon there was a fair demand for Modder East at advanced rates from the low price ruling during the past few days. Thursday's call was once more dull, with very little business and prices in the leading stocks, with the exception of the Modderfontein lot, Brakpans and Clydesdales, were generally lower. The outside dealings for the week comprised sales: Makganyene, 51s. 9d. to 42s. 6d.; Monteleo, 14s. to 12s. 3d.; Phoenix, 1s. 1d.; Koodoo Vendors, 12s. 6d.; Compounds, 2s. 3d. to 1s. 6d. Buyers and sellers: Makganyene, 43s. 6d.; Koodoo's, 15s. buyer; Vendors, 13s. 6d. buyer; Henderson Estates, 5s. buyer; options, 1s. buyer; Lydenburg Lands, 2s.—2s. 3d.

The market had a better tendency on Friday morning, as the following alteration in prices will show:—Sales: City Deeps, 51s. 6d.; East Rands, 5s. 9d.; East Rand Coals, 2s. 2d.; Eastern Gold Mines, 1s. 3d.; East Rand Deeps, 10d.; Geduld Props, 15s. 6d.; Government Areas, 92s. 3d.; Jupiters, 4s. 3d.; Klerksdorp Props, 1s. 1d.; Knight Centrals, 6s. 1d.; Leeuwpoots, 23s. 9d.; Modder Easts, 19s., 19s. 1½d., and 19s. 3d.; New State Areas, 23s.; Pretoria Cements, 68s.; Randfontein Deeps, 1s. 3d.; Sub Nigels, 22s. 3d.; Tweefonteins, 25s.; Village Deeps, 17s.; Van Dyks, 2s.; Lydenburg Farms, 8s. 3d.; West Springs, 23s. The last price of South-Westerns was 70s. Buyers and sellers: Brakpans, 63s., 65s.; Clydesdales, 22s. 6d., 23s. 6d.; Daggafonteins, 22s. 6d., 23s. 6d.; Options, 2s. 3d., 2s. 6d.; Hume Pipes, 29s. 6d., buyer; New Modders, £26, £26 10s.; Randfonteins, 14s. 3d., 15s.; Roberts Victors, 11s., 11s.; South Van Ryns, 8s. 9d., buyer; S.A. Lands, 6s. 6d., 6s. 8d.; Sub Nigel (10s. paid), 12s., 12s. 6d.; Springs, 57s. 3d., 57s. 9d.; Transvaal Lands, 21s., 23s.; Van Ryn Deeps, 67s. 6d.—67s. 9d.; Zaaipplaats, 12s., 12s. 6d.; Frank Smiths, 3s. 9d., 3s. 11d.; Makganyenes, 11s. 6d., buyer.

	Fri., 14th.	Sat., 15th.	Mon., 17th.	Tues., 18th.	Wed., 19th.	Thurs., 20th.
African Farms . . .	15 0	14 6*	14 9*	14 6*	14 6*	14 6*
Anglo Amer. Corp. . .	24 9*	27 6*	28 0*	24 0*	24 0*	24 0*
Apex Mines	6 6*	6 6*	6 9	6 6*	6 6*	6 9*
Bantjes Cons.	1 10*	1 9*	1 9*	1 9*	1 10*	1 11*
Brakpan Mines	60 0*	60 3*	60 0*	61 0*	62 0*	62 6*
Brick and Potteries . .	—	4 0*	—	4 0*	1 0*	—
Bushveld Tins	0 7*	0 7	0 4*	—	0 7*	0 8*
Cindrella Cons.	3 3*	3 3*	3 3*	3 3*	3 3*	3 3*
City and Subs.	6 3*	6 6*	6 9*	—	6 0*	6 0*
City Deeps	52 3*	—	51 0*	51 0*	51 6*	51 6*

	Fri., 14th.	Sat., 15th.	Mon., 17th.	Tues., 18th.	Wed., 19th.	Thurs., 20th.
Clydesdale Colls. . . .	22 0*	22 6*	24 0*	22 6*	22 6*	22 6*
Con. Investments . . .	23 6*	23 6*	24 0*	23 0*	21 0*	24 0*
Con. Langlaagtes . . .	17 0	16 6*	16 6*	17 0*	17 0*	16 0*
Con. Main Reefs . . .	11 0	—	10 9	—	10 9*	10 9*
Con. Mines Sel. . . .	24 0*	—	25 0*	24 3*	24 0*	24 9*
Coronation Freezes . .	1 1	1 1*	1 1*	1 0*	1 1*	1 2
Crown Diamonds . . .	13 0*	13 9	11 0	14 0½	17 0	16 6
Daggafontein Mines . .	—	21 0*	23 0*	22 6*	23 0	—
Do. Options	4 0*	3 0*	3 0	2 6	2 10½	—
Durban Road Deeps . .	8 0*	8 0*	—	—	8 0*	8 0*
East Rand Coals . . .	2 2*	2 2*	2 2*	2 2*	2 2*	2 2*
East Rand Deeps . . .	0 10*	0 10*	0 9*	0 9*	0 9*	—
E.R. Minings	17 3*	18 0*	17 0*	18 0*	17 0*	18 0*
East Rand Props. . . .	5 6	5 9	5 9*	5 9*	6 0*	6 0*
Eastern Golds	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Frank Smith Dias. . . .	3 8*	3 9	3 8*	3 10*	3 9*	3 7*
Geduld Props.	46 3	45 0*	45 0*	45 6*	45 6	45 0
Ginsbergs	—	—	—	—	—	3 0*
Glencairns	—	—	1 0*	1 0*	—	—
Glentoe Colls.	—	6 0*	—	6 0*	—	—
Glynn's Lydenburgs . .	21 9*	21 6	21 6*	21 9*	21 6*	21 6*
Govt. Areas	94 0A	92 0*	92 0*	92 0*	92 3*	91 6
Jhb. Bd. of Executors .	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	4 6*	4 6*	4 6*	4 6*	—	—
Klerksdorp Props. . . .	1 1*	1 1*	1 1*	1 1*	1 1*	1 1*
Knight Centrals	6 2	5 9*	5 10*	6 0	5 10*	5 10*
Lace Props.	21 6	20 9*	21 3*	21 3*	21 6*	21 0*
Leeuwpoot Tins	24 6*	24 6	24 0*	24 0*	21 6*	23 6*
Lydenburg Farms . . .	8 7*	8 6*	8 6*	8 7*	8 7*	8 7*
Meyer and Charlton . .	83 0*	83 0*	83 0*	83 0*	83 0*	—
Middelville Est.	1 0*	1 0*	1 0*	1 0*	1 0*	—
Modder B's	161 3	158 6*	155 0*	160 0	—	160 0
Modder Deeps	146 0*	141 6*	145 6	145 6	145 0*	145 6
Modder Easts	19 0	19 1½	19 0	18 9	18 10½	18 10½
Do. Options (3yrs.) . .	4 0	3 9	3 6*	3 6*	3 3*	3 7*
Do. Options (4yrs.) . .	5 6	4 10*	4 8*	4 9*	4 9*	5 0*
Hume Pipes	27 9*	27 0A	27 6*	28 0	28 3*	29 0*
Natal Naviga. Colls. . .	—	20 0*	21 9*	—	21 9*	—
National Banks	£15†	£14½	£14½	£15†	—	£15†
New Boksburgs	—	1 0*	1 0*	1 0*	1 0	1 0*
New Eland Dias. . . .	26 6*	26 6	25 0*	25 0*	24 6*	24 6*
New Era Cons.	9 3*	9 6*	10 0	9 6	9 9*	9 9*
New Geduld Deeps . . .	5 10*	5 10*	5 10*	5 9	5 11*	6 0*
New Heriots	—	—	—	—	10 9*	11 0
New Kleinfonteins . . .	11 9*	11 6*	12 0*	12 0	12 3	12 3
New Modders	—	£26½	£26½	£26½	£26*	—
New Unifeds	—	—	—	3 6*	—	—
Nigels	5 6	5 6*	5 6*	5 6*	5 6*	5 6*
Nourse Mines	13 6*	13 0*	13 10*	14 0*	14 3*	14 6*
Premier Pref.	—	155 0*	155 0*	155 0*	—	—
Pretoria Cements . . .	61 0	63 3*	64 0	64 0	66 0*	66 0*
Princess Estates	3 2	3 3	3 2*	3 2	3 0*	3 0*
Rand Collieries	3 0*	3 0*	—	—	—	—
Rand Nucleus	1 9†	1 6*	—	1 8†	1 6*	1 6*
Rand Select. Corp. . . .	75 6*	78 0	85 0	80 0*	81 0*	80 0*
Randfontein Deeps . . .	1 9†	1 3*	4 3*	4 3*	4 3*	4 6
Randfontein Est.	11 0*	14 3	13 9*	14 0*	14 0*	14 0*
Roberts Victors	10 0*	10 0*	10 0*	10 0*	10 3*	10 0*
Rooibergs	5 6	5 6	5 7*	5 6	5 3*	5 0*
Rodepoort Uniteds . . .	—	2 0*	—	—	—	3 0*
Ryan Nigels	3 3*	3 3*	3 0*	3 3*	3 3*	3 3*
Shebas	1 0*	1 3*	1 3*	1 3*	—	1 3*
Simmer Deeps	4 8*	—	—	1 7*	—	1 6*
S.A. Lands	6 1	6 3	6 4*	6 5	6 7	6 4*
Springs Mines	59 3	56 9	57 3	56 9*	57 0	56 6*
Sub Nigels	22 3*	22 0*	22 0*	22 0*	21 9*	22 0*
Swaziland Tins	—	15 0*	16 0*	17 6*	—	20 0*
Transvaal Lands	—	15 0*	16 0*	17 6*	—	20 0*
Transvaal G.M. Est. . .	13 6*	11 0	14 0*	14 0*	15 6†	14 6*
Van Ryn Deeps	67 0	67 3	67 0	67 3*	67 6*	67 3*
Village Deeps	16 6*	16 6*	16 6*	—	17 3†	16 6*
Village Main Reefs . . .	14 0†	—	12 0†	10 0*	10 0*	10 0*
Welgedachts	26 6†	—	26 0†	26 0†	26 0†	—
West Rand Cons.	—	3 0*	—	3 0*	3 0*	—
Western Rand Est. . . .	1 3*	1 4*	1 3*	1 4*	—	1 4*
Witwatersrands	—	—	17 6†	—	—	15 6*
Wit. Townships	11 6	11 6*	12 0	13 9	13 9†	11 0
Wolbuiters	—	3 3†	—	3 0†	—	3 0†
Zaaipplaats Tins	12 9	12 6	13 0†	12 9†	12 3*	—
Union 5 per cent. . . .	£102½	£102½	£102½	£103*	£103½	—
New States	23 3*	23 3	23 0*	23 0	23 0	22 9*
S. Van Ryns	9 6A	9 3*	9 6	9 3*	9 3	8 9*
S.A. Alkali	31 0	31 0*	31 0*	33 6*	33 6*	32 6*
Tweefontein Colls. . . .	21 0†	22 6*	22 6*	22 6*	25 0	23 0*
West Springs	23 9	23 0*	24 0A	23 0*	23 0*	22 0*
West Springs Op.	—	9 0	8 6*	8 6*	8 6*	8 3*
New Jagers	—	92 6*	92 6*	—	—	92 6*

Witwatersrand Agricultural Society.

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J. G. TORRANCE,
Secretary.

INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- April 17.—Apex Mines, Ltd. Twenty-second Ordinary General, Board Room, Fourth Floor, National Bank Buildings, at 11 a.m.
April 22.—Princess Estates, at 3 p.m.
April 23.—Modder Deep Levels, at 10 a.m.
April 23.—Geduld Deep, at 3 p.m.
May 27.—New Primrose G.M. Co., Ltd. Annual Ordinary General Meeting, at 12 o'clock.
May 27.—New State Areas, Ltd. Second Ordinary General Meeting, at 12.30 p.m.
May 27.—New Unified Main Reef G.M. Co., Ltd. Twenty-first Ordinary General Meeting, at 12.15 p.m.
May 27.—Ginsberg G.M. Co., Ltd. Twenty-fourth Ordinary General Meeting, at 11.30 a.m.
May 27.—Glencairn Main Reef G.M. Co., Ltd. Twenty-sixth Ordinary General Meeting, at 11.15 a.m.
May 28.—Consolidated Langlaagte Mines, Ltd. Sixteenth Ordinary General Meeting, at 10.40 a.m.
May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd. Ninth Ordinary General Meeting, at 3.30 p.m.
May 28.—Langlaagte Estate and G.M. Co., Ltd. Twenty-eighth Ordinary General Meeting, at 12 o'clock.
May 28.—Randfontein Estates G.M. Co., Ltd. Twenty-sixth Ordinary General Meeting, at 2.15 p.m.
May 28.—Van Ryn Deep, Ltd. Fourteenth Ordinary General Meeting, at 3.10 p.m.
May 28.—Witwatersrand G.M. Co., Ltd. Annual Ordinary General Meeting, at 11.30 a.m.
May 30.—East Rand Proprietary Mines. Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.
June 19.—Rose Deep. Twenty-third Ordinary General Meeting, at 11 a.m.
June 24.—Geldenhuis Deep. Twenty-fourth Ordinary General Meeting, at 11 a.m.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employ-

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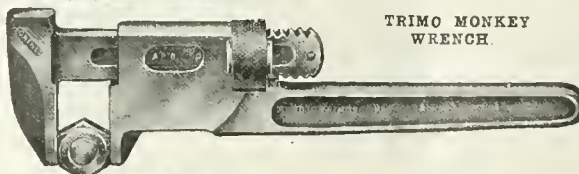


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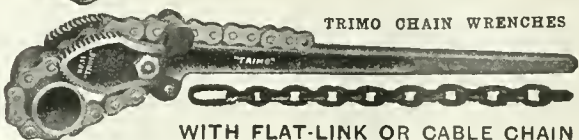
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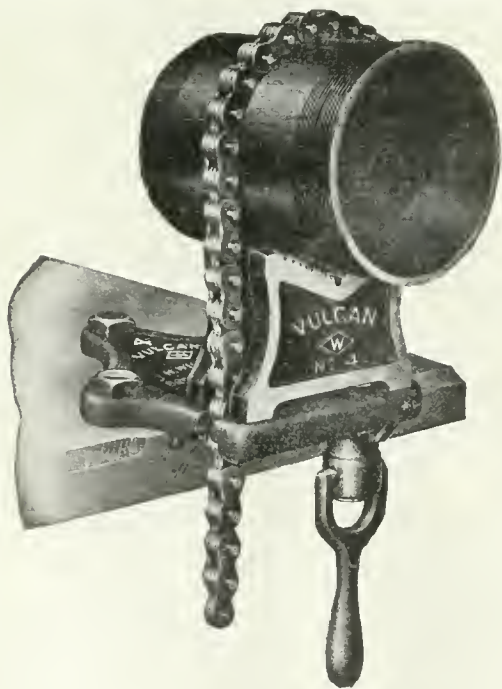
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ENGINEERING SECTION.

THE KALAHARI LAKE SCHEME.—II.

[By PROFESSOR E. H. L. SCHWARZ, Rhodes University College, Grahamstown.]

On the Okavango side, the Caundu River comes out of the main stream far up near the head waters, traverses the maze of oshanas in the Cafina district, and the river-bed passes about twelve miles east of Ondongua as a well-defined course. It is quite dry now and only fills from the sides when it rains, but the people tell of the time when they used to make sacrifices to propitiate the crocodiles in this river. At one time it formed a barrier which separated the two halves of the Ondonga nation; on the west was Kambonde's country, the Umkunda, or district of the Morulas, Onamahongo, and on the east was Nechale's country, the Oshitombe Umkunda. Nowadays this formidable barrier is only a sandy depression and the Ondonga nation is no longer divided.

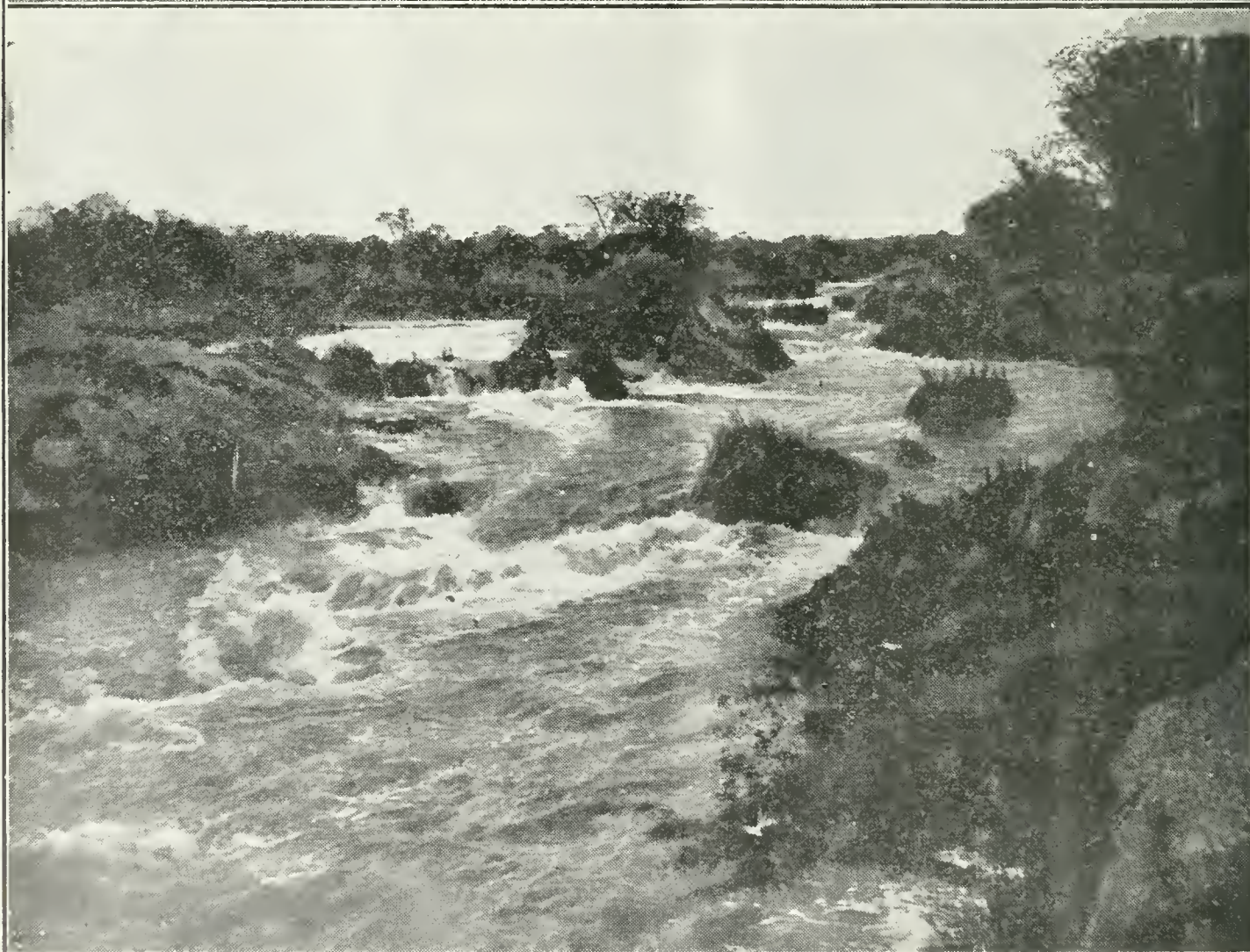
so in Nangora's time, say, sixty years ago. Besides the dam below Otjimpolo Fontein, the wearing down of the cataract has naturally tended to lessen the flow, and I doubt whether it will ever be practical politics to revive this river. That it was once a very big river was evident from the wide flood-plain on the east bank. There are a number of vleys on this plain, lying parallel with the river, of which Kambonde's Vley is the best known; it is marked on the maps of the country, but is placed some 25 miles to the east of its actual position. Kambonde's Vley is really a collection of four vleys, joined by an oshana and lying at right angles to the river, which is five miles distant; the first three lie in a semi-circle and the fourth, Kambonde Ineni, lies east of them. The country round here is forest, the big trees



SKELETONS OF THE OVAMBO WHO PERISHED IN THE FAMINE OF 1915-16.

The next spill-way is the Otjimpolo River, which is first turned out of the main stream by the Maculungungo Cataract, but the Balacueo and Tandawi Rivers join it lower down. At Otjimpolo Fontein the river has built for itself a dam of sand and debris which effectually cuts off the lower portion of the river. I struck the Otjimpolo River in the heart of the Omaheke, on my way to Kambonde's Vley, and I questioned some old native hunters who were with us as to when the river had last run; they said no one living remembered the river to have flowed, but they said it did

being mostly Karneel Doorn and Teak, but there is a dense undergrowth of smaller thorn-trees and Mopani. The direction of these vleys suggested that they formed part of an oshana which once connected with the Okavango by the Hyaena River, but if that had been the case formerly, all traces of the connection has disappeared. There is another vley between Kambonde's and the river; it is called Nanguti and is merely one of the numerous vleys that we encountered travelling down the east bank. Some ten miles from Kambonde's Vley, to the south-west, there is a deep water



KURING KURU, A PORTUGUESE FORT ON THE OKAVANGO RIVER.
OTJIMBUNGU CATARACT, CUNENE RIVER.

hole dug in the bed of the river, called Igola, but it was dry when we arrived there. The teak trees here were very fine and were seemingly in a flourishing condition; away from the river, however, a large proportion of them are dead. The river-bed here lies some 20 feet below the flood-plain and is 30 to 40 yards across; it could easily accommodate the Cunene River. The Otjinapolo River traverses thick bush country to Ombuga (Yangwari's Kraal), and thence goes south to enter the Etosha Pan in the centre of the northern side. Towards the Pan the river valley becomes wider and deeper and forms a very noticeable depression in this flat country; the clay bottom forms a good motor road from the pan to the main road past Nonteli. The whole of the bush country is full of small vleys, called "Etheas"; they are elongated in a north-easterly direction and are parts of oshanas that once communicated with one or other of the omulongas, or better defined rivers. The bank of sand by which they were originally stopped is in most cases well shown even now. In fact there is no spot in the whole of the Ovamboland plain which has not at one time been part of a river bed; this fact comes out very clearly in the rainy season, when the country is a succession of islands with water everywhere around.

THE ETOSHA PAN

The Etosha Pan is a vast level floor of slaty green clay; when the surface becomes wet the colour changes to a yellowish green. The colour is due to a vegetable growth, probably diatomaceous, since there forms on the surface flat lumps of white flint, similar to the white flint that forms in the vleys of the Cape Province. When the wind blows over the dry surface, it raises a cloud-like steam. On one occasion I was enveloped in the cloud, which was thick enough to blot out the landscape; there was no grit in the cloud-dust, nor was there any saltiness in it, so that I believe the dust to be formed of the minute skeletons of the dead diatoms. The edge of the pan is white chalky clay, which material underlies the whole pan. From the pan one climbs out on to banks about 4 feet high and these banks are the edge of the great bare grass-covered flats that surround the pan on the north. Nothing can be done with these flats, as they are so nearly at pan-level and the roots of plants would, when the soil was moist, find stagnant water at a very slight depth. The flats stretch from Andoni to Namutenja, 10 miles south of Nonteli, and then westwards to the river-beds that come down from Ondongua. Between Andoni waterhole and Nonteli waterhole, a distance of 55 miles, there is no water, and this stretch is an extremely trying one for the slow ox- or donkey-wagons; as a matter of fact, the wagon I was in, which had a team of 20 oxen, what from the heat on the open flats and the want of water, barely got through. On the north of the flats is the bush country that I have already described, forming an encircling wall, some 40 feet high.

At the north-west corner of the pan, the rivers that come from Ondonga enter it by fairly deep, donga-like channels. All of these come either from the Cunene or the Okavango, except the Cariango or Cuvelai, which has a separate source in the Angola Highlands. There is an island here made of Kalahari limestone, which, with an outcrop on the same parallel on the east bank of the Otjinapolo River, is the last appearance of anything in the nature of a stone to be found till the hills of Angola are reached. The west bank of the pan is similar grass flats, raised 4 feet above the pan-floor, but here the flats merge into open grass country 40 or 50 feet above the pan. The southern border of the pan is made of Kalahari limestone, which may approach the pan as a wall 40 feet high, or the limestone may be concealed by sand covered by bush. The border is serrated and long tongues of grass flats penetrate from the pan into the higher ground. It is on these flats that the countless thousands of zebra and wildebeeste graze, for whose protection the pan has been proclaimed a Game Reserve. According to one of my informants, these tongues penetrate so far as to pierce the hedge of hills separating the Etosha basin from the drainage area of the Ugab River; in fact the Germans had a project to fill up the Etosha Pan and to irrigate from it along the Ugab. According to the

maps, however, the level of the Ugab at Outjo, 80 miles south of the pan, is considerably above the level of the pan, and the matter must be left till a survey is made to settle it.

The Kalahari limestone, of which the country south of the Etosha Pan is made, and which extends eastwards beyond Tsintsabis on the same parallel, forms an inclined plain bordering the Otavi limestone hills. It has every appearance of having been formed under a covering of sand, composed largely of grains of limestone. Over large areas, now, the sand has disappeared and the surface is a most heart-breaking jumble of limestone blocks, weathered into all sorts of jagged shapes. It is covered with thick bush that in the dry season appears to be dead, but when the rains come the sap rises, and although it may not reach the ends of the branches, it is sufficient to make the trees look green. There are a few wells dug in the limestone which give a meagre supply of water. At the edge of the Etosha Pan there are several springs, of which Okaukweyo, Hoas and Namutoni are the principal.

Namutoni is one of the three great forts that the Germans built to protect them from the Ovambos; the other two are Zessfontein and Okaukweyo; Tsintsabis is smaller. It stands on a lake terrace 25 feet above the pan; behind is another terrace 40 feet above the pan. The edge of the terrace is very well shown towards the Ondowa Pan, a small pan 10 miles across, which is connected with the big Etosha (Etosha means pan) by the Onsila channel. This edge is an abrupt bank leading down to a lower terrace, 10 feet above the pan, and this, with an equally abrupt descent, leads on to the grass-covered surface of the Ondowa Pan. This last is surrounded by similar terraces covered with thick bush; on the east the bare pan-surface appears, and through the middle of the pan the Ovambo River meanders. In the limestone of the 25 feet terrace there is a mudhole, about 30 yards across, filled with a luxuriant growth of reeds and from opposite sides of this a furrow leads out a magnificent stream of water. Unfortunately, nothing will grow under irrigation here, so the water is allowed to run to waste down to the Ondowa Pan, but in doing so it forms a wide strip of vley ground at which thousands of big game drink and in which large numbers of water fowl settle. About three miles to the south, there is Klein Namutoni, a similar mudhole, but from which no water issues. The Hoas springs form at the base of the limestone terrace and are not very strong, but are permanent. The main interest of Namutoni lies in the terraces, which show that the pan was once filled up with water to the 25 feet level. From what I could see, if the Etosha Pan were to be filled up to 20 feet, the water would flow far up the Ovambo River; the water, if kept at a steady level, would percolate through the sandy country between the Ovambo River and the Okavango, and would eventually reopen the channel connecting the two rivers. In this connection it must be remembered that the Okavango is lower now, owing to the erosion of its bed, than it was when the two rivers originally communicated with one another, so that it should be easier on that account to reverse the flow; the matter must, however, be settled by actual levelling. At 20 feet the whole of the grass flats bordering the Etosha Pan would be covered, and the area shown on the map would be about doubled; these flats are the most useless, miserable country imaginable. The Bushmen burn the grass, and after rain the grass grows and the game feeds on it for a short while, but the grass soon withers and for the rest of the year the flats are a howling, empty waste, uninhabited and uninhabitable. If the water level were to be raised 40 feet, the area of the inundation would be very slightly increased, but I doubt very much whether so much water could be collected from the Cunene alone, and if it were impounded in the Etosha, whether it would stay there, seeing that the Ovambo River connects with the Okavango. There is no salt in the Etosha Pan, but salt forms in some smaller pans on the flats to the west of the pan at a considerably higher level; the salt is derived from drainage from the western hills

(To be continued.)

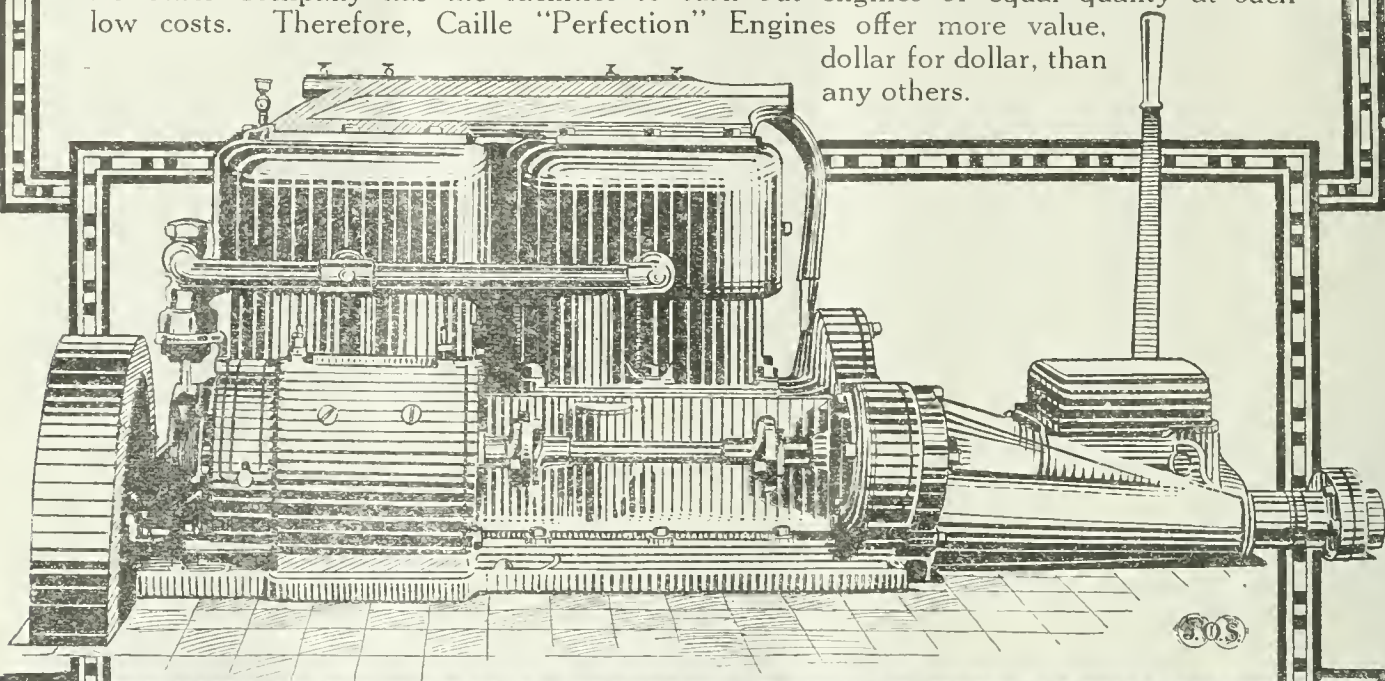


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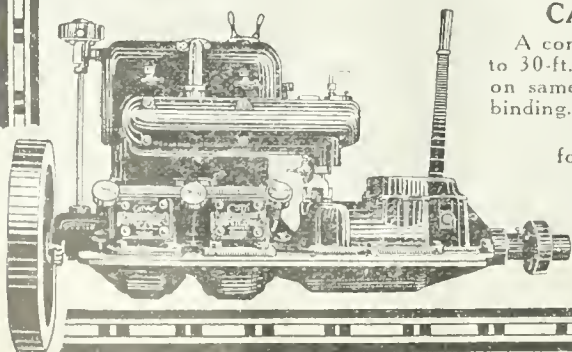
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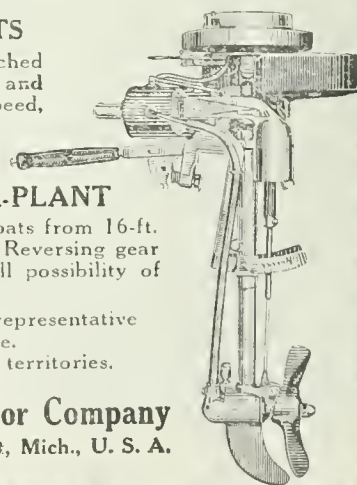


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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Johannesburg as the Commercial Centre of South Africa—Coach Builders and Farriers—Timber and Other Building Materials—Iron, Steel and Mine Sundries—Electrical Goods—Oils and Colours—Explosives—British Trade.

JOHANNESBURG has during the war come into great prominence as the commercial centre of the hinterland, with now and again requisitions from the coast towns. An iron and steel firm here had one of their best months in February since the Armistice for Transvaal steel and iron bars as well as some imported. The orders came from near Capetown up to the Belgian Congo and German East, also the business in Johannesburg and Reef from engineering shops and foundries was quite good. In other hardware lines as well as second-hand materials the orders have been very general throughout the Union, as a rule not in big quantities but specialities, although some very decent orders have been negotiated. The fact is owing to our big consumption for the mines, railways and municipalities Johannesburg has been converted into a big storehouse, therefore when the requirements are not to be had in other places, the answer is: "Oh, send to Johannesburg, where you are sure of getting it, or a very near substitute." According to several brokers more enquiries resulting in more business have been made from week to week since the armistice, and there are good reasons to anticipate that this great centre will become more pronounced as a distributing one. For instance, look at our iron and steel trade, where two large Transvaal factories are putting out no small quantities and these products are recognised even now as sufficiently good for all ordinary purposes, and when the pig iron output is advanced, as promised from reputable authorities, our South African iron and steel should come very near, if not equal to, the imported. Then again we have Transvaal cement to compete with anything from overseas, both as regards quality and quantity. Glazed pipes also are excellent, which must be so as they are universally accepted as such throughout the Union, and it seems more than likely that the Hume concrete pipe company will have most of their manufacturing in the Transvaal. Our great strength is, however, in keeping up the supplies for the mines of over seven millions' worth per annum, hence our big depots which can be drawn upon, as is being done from all parts of South Africa. In this connection it is marvellous that so few—only one came under public notice—failures, notwithstanding the slump and, what is of more importance, the do-nothing stage engendered since the armistice.

COACH BUILDERS AND FARRIERS.

The better class vehicles, trade, and farmers' carts are experiencing a very slack time, and what little is doing is chiefly manufactured at the coast. The fact is, according to a Johannesburg maker, that we cannot compete with the coast because of the cheaper white labour as well as the coloured. In connection with the colour bar question, it is very interesting to read that an amendment was proposed in Parliament to enable coloured men as well as white men to peg claims.

The question was subsequently settled by the Minister moving an amendment to the effect that the provisions of the Bill (Precious Stones) would apply to the Transvaal only. This meant that the colour bar would not be operative in the Cape Province, where anybody, be the colour what it may, can peg claims. It is a big problem and indicates wherever the coloured man has a footing he is going to keep it.

TIMBER AND OTHER BUILDING MATERIALS

There is another small drop in the price of timber, as deals are 1s. 7d. to 1s. 7½d. per foot according to length; flooring, 9d. to 9½d.; ceilings, 6d. to 6½d. This is undoubtedly due to the effect of the builders' strike, as one timber merchant said that deals, per his last consignment, at the high original cost and proportionately higher rates for freight, landed in Johannesburg meant 1s. 9d. per foot. He was asked, why lose so much? and he answered that we are on the eve of re-opening the Baltic ports after their winter, when the freights are expected to be lower, and maybe the original cost as well, therefore the sooner some of the plentiful stocks in South Africa were got rid of the better, as no one could stop new consignments coming. Glue is cheaper than ever, being 1s. per lb. wholesale, owing to the super-abundance of stocks brought into the country by speculators. The price of galvanised roofing iron is 1s. 5d. to 1s. 6d. 24 gauge and 1s. to 1s. 2d. per foot 26 gauge. In the second-hand market business is stagnant, being even worse than last week. Prices are on the easier side in sympathy with the drop in new material. Inquiries made both locally and from the country indicate that immediately the strike is settled, business throughout the building trade will be sent ahead very quickly. Towards that end even the present writer has been appealed to by a goodly number on both sides to help a settlement because they are all getting tired of the deadlock. The brickyards are not doing anything in the way of selling, but they keep on making for stock, which must be wanted some day they contend. The cement and lime position remains the same.

IRON, STEEL AND MINE SUNDRIES

Assorted sized shovels are 75s. to 80s. per dozen, merchant to merchant, which represents a drop of about 20s. The only reason for this is that stocks are fair and imports keep coming through and there is hardly any demands from the mines and certainly none from the building trade—and people must endeavour to do business to pay establishment expenses. There has been a run on barbed wire at 12s. 6d. and galvanised 8 gauge wire at 15s. to 50s. as the fencing season has commenced. Imported English iron is 55s. to 70s. 100 lbs. according to size. Drill steel 10d. lb., and hollow 1s. 3d., American a shade lower; mild steel 6½d. to 7½d. lb. and drill steel about the same. The overseas markets advanced about 10 per cent. of late, but not so far affected ours. Wire nails about 15s. per 100 lbs. average size. Mild steel, ¾, 80s.; ¾, 72s. 6d.; ½, 70s.; ¼, 57s. 6d.; ¼, 62s. 6d. ½ upwards, 6½d. lb.; flats about same. Files, 25 per cent. on listed price. Trams, £28 to £30 per ton. Piling—still very poor in the demand, as the mines seem to be

out of the market. Notwithstanding an advance equalling 5 per cent. in England, our local prices seem easier, simply because of such heavy stocks purchased originally by speculators. Flat galvanised iron is only from 55s. to 60s. per 100 lbs.

ELECTRICAL GOODS.

No alteration in prices, and business is dull. There are still big lots of lumps on hand and one leading merchant alone has received advice of a shipment of 15,000 being on the way, which will bring his stock up to over 100,000. Tubing is exceedingly scarce; prices are $\frac{3}{4}$ in., 45s. to 50s. for plain; for screw, $\frac{3}{4}$ in., 60s. Japanese wiring is plentiful and is reported to be of good quality. There is said to be any quantity of electrical goods at Durban. In connection with electrical matters it is interesting to note that a new local venture, the City Plating Works, which produces zinc for batteries, is said to be more than justifying its existence.

OILS AND COLOURS.

It appears that speculators have not yet cleared out as 100 cases, each 8 gallons I.G., of linseed oil changed hands at 62s. 6d. There was no free buying, and it had to be realised, hence the low quotation. However, from merchant to merchant the price is only from 9s. to 10s. per gallon. White lead (genuine) is 80s. to 85s. per 100 lbs., on account of heavy stocks, as it cannot be landed under about 11d. lb. The ordinary price in a shop for 100 lbs. is 1s. 10. Turps are 67s. 6d. 2-4's, and 75s. 10-1's, with an erratic tendency. Carbide is 80s. per 100 lbs., and lamps 11s. Plate and sheet glass are in plenty, but town and reef business is slack in the extreme owing to the strike; however, there are fair orders from the country.

EXPLOSIVES.

Not much change of importance. It now depends upon the mines, as the supplies are ample unless the consumption increases, but whatever happens there is no difficulty in obtaining the necessary ingredients. There are tons of fuse and detonators on hand, also nitrate of lead can be supplied as required, and there is no difficulty in obtaining sulphuric acid. The substitute for gelignite is now being used in an additional number of mines, in place of standard gelignite, and so far has given satisfaction.

BRITISH TRADE.

The recent interpolation in the House of Commons as to the trade policy of the British Government and the reply of Sir Auckland Geddes thereto are interesting as showing that the present uncertainty which exists among the business community in Britain, owing to the war restrictions, is likely soon to be removed by the raising of the blockade. What this would immediately mean, the Minister further assures us by stating that exports to non-blockade countries would not, with some exceptions, be under restrictions, and that the Government policy was to transfer the number of manufactures to the free list. This, together with the further statement that the Government were also trying to increase the classes of goods which could be exported by licence and doing all they could to assist the export trade, should be hailed with great satisfaction. On top of this gratifying announcement comes the welcome intimation that the Federation of British Industries is dispatching a Committee to South Africa to investigate our market with a view to developing the British export trade with the Union. This action should have as effect a better and closer knowledge of our local requirements, and thus prevent the future despatch of orders which can be executed in Great Britain to other markets.

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Notes and News.

Crown Diamonds.

We understand that this company intends to commence washing ground taken from the area recently discovered under the hardibank zone on a considerable scale at an early date.

* * * *

The South-East Rand.

Much interest is being evinced in the reet discovery in the south-eastern portion of the Rand in the vicinity of Witpoort and the Van Dyk mine, to which reference was made in our columns a week or two ago. It is believed this ore body extends over a considerably larger area than was at first deemed to come within the scope of the discovery.

* * * *

T.G.M.E. Dividend Passed.

The operations of the T.G.M.E. Company for the current half-year having resulted in a loss due to extreme shortage of native labour following upon the epidemic of Spanish influenza, the board of directors has decided to declare no dividend for the period ended 31st March, 1919.

* * * *

Wit. Deep.

At this property both shafts are now in commission and work is stated to be proceeding in a very satisfactory manner under the supervision of Mr. Johns, the new manager. The new board attribute the recent advance in the price of the shares to "a greater feeling of confidence in the property and to the removal of the fear that the mine would be closed down."

* * * *

Sakalavas.

We learn that the Sakalava Madagascar Proprietary Oil Fields encountered a measure of sea shells in its borehole before encountering oil. Marine shells are a fairly common development in cretaceous strata, and this discovery is not unfavourable to the company's prospects of locating oil in payable quantities, whilst on the other hand it does not necessarily throw much informative light on the problem of the locality of an oil gusher if such a gusher exists on the property. We understand that Mr. English, one of the directors of the company who has recently been superintending operations in Madagascar, is due to arrive in Johannesburg shortly.

* * * *

Prof. Schwartz's Articles.

Owing to pressure on our space this week, due to the necessity for including a full report of the proceedings at the annual meeting of the Chamber of Mines, we have been compelled to hold over several important articles, notably the continuation of the series by Prof. Schwartz on the Kalahari Lake Scheme and an interesting account of the native hospital at the City Deep.

* * * *

Consolidated Mines Selection Changes.

The following changes in the staff of the C.M.S. group have been made with effect from the 31st instant:—Mr. A. F. Lyall appointed a joint sub-manager; Mr. C. R. Davis appointed consulting engineer, *vice* Mr. C. E. Knecht resigned. Mr. C. B. Brodigan appointed manager Brakpan Mines, Ltd.; Mr. B. D. Bushell appointed manager Daggafontein Mines, Ltd.; Mr. H. W. Pridgeon appointed manager West Springs, Ltd., *vice* Mr. T. T. Nichol resigned. The appointment of a new manager of Springs Mines remains in abeyance for the present and will be notified through the press when made.

* * * *

A New 7,000 ft. Circular Shaft.

Tangible evidence of the decision reached regarding the mode of working the deepest levels of the City Deep is afforded by the excellent progress being made at the new circular shaft on that mine. It will be remembered that it was decided, on the score of both cost and efficiency, that

a new circular shaft from the surface is the best method of dealing with the problem. The cost of sinking and temporary equipment is estimated at £239,000; and for permanent equipment for a large tonnage a further £192,000 will be required. The exact depth of the shaft cannot be estimated until the reef is intersected, but provision will be made to reach a depth of 7,000 ft. if necessary. The time required for sinking the shaft will be about five years, and another two years beyond that will be necessary for development connections—that is, a period of seven years will elapse before stoping operations can be started. Any attempt effectively to develop this southern area with the present inclines would fail. The slowness of incline shaft sinking, and its eventual expense; the cost of added equipment underground for the rehandling of the ore; the heavy maintenance costs of the shafts at depth, and the ventilation difficulty are all factors which, combined, point to the distinct advantage of a new vertical shaft from the surface. The temporary headgear has been completed and sinking is now in progress.

Drilling Extraordinary.

The *Journal of the Royal Society of Arts* for February 14 says: "An oil well has been sunk in the Californian fields to the depth of 2,125 ft. in twelve and a half days by the rotary drill, the hole beginning with a 17½-inch diameter. In one single day, according to the *Petroleum Review*, no less than 680 ft. of substrata were pierced, while the daily average was 170 ft. In every branch of engineering the last decade has seen enormous strides, but in none has this progress been more pronounced than in oilfield operations. The days when it frequently took twelve months—and much longer sometimes—to get a well down to the oil are fortunately passed, thanks to the now general adoption of the rotary system of drilling." The above has already appeared in our columns, but we reprint it in the hope that some of our readers may be able to add to the data given by our American contemporary.

Sakalava Oil Strike.

The following telegram was received on Thursday from Mr. English at Majunga, dated March 26: "Robinson (field engineer) telegraphs eighteen forty encountered continuous oils and upper layer hard dry now showing liquid oil and gas cementing off water before proceeding and testing flow."

Makganyene Diamonds.

We have received the following from the secretary for publication: "It has been brought to the notice of my board that a syndicate is to be formed to be called—it is understood—the Makganyene Diamond Extension Syndicate, Ltd., and I am instructed to say that this syndicate is in no way connected with the Makganyene Diamond Syndicate, Ltd., who own the rights on the whole of the farm 'Makganyene,' situated in the district of Kuruman, Cape Province."

The National Industrial Corporation of S.A., Ltd.

The new £1,000,000 bank has now been registered under the title of "The National Industrial Corporation of S.A., Ltd." The principal shareholders in the new institution are the National Bank of S.A., Ltd., the Central Mining people, and the Anglo-American Corporation of S.A. The business and goodwill of the Industrial Development Co. will be taken over on the share for share basis, and the scope will be extended to embrace every form of activity undertaken by an industrial bank on the lines familiar to students of the workings of the German bank system. It will be remembered that the Farrington Commission recommended the establishment of such banks in the British Empire, and the British Trade Corporation, for which the Standard Bank are the South African agents, was formed on the lines laid down. A hearty welcome and lots of remunerative business, we hope, are assured for this new institution designed to help in financing the industries of the country.

"End of the War."

A White Paper issued in mail week contains the recommendations of the Select Committee appointed to consider what provision should be made by Parliament for defining the meaning of the phrase "the end of the war." The Committee recommend that legislation should be introduced to declare that the date of the ratification of the peace treaty should be the date referred to in the various phrases employed in emergency legislation. This hardly goes far enough. Not only the date, but the hour, of the "end of the war" needs to be defined with scientific and legal precision, if interminable and profitless litigation is to be obviated.

New British Overseas Bank.

It is understood that the capital of the British Overseas Bank, the name of the new banking institution the capital of which is being furnished by several leading banks in Great Britain, will be about two millions sterling. The scheme represents an entirely new development in British banking enterprise. It will aim at providing additional facilities for British import and export trade and developing closer working arrangements between constituent banks, each of which covers a different territory. The new bank will establish branches abroad, thus saving participating banks from each having to open separate branches abroad, in order to cater for business outside the territory in which they now operate.

Concrete v. Iron: A Hint to South Africa.

A cable from London states: "It will be of interest to South Africa to know that apart from shipping difficulties and the rise in prices caused by the war, coal shortage and labour conditions have caused innumerable changes in developments. One of the most significant is the decision of the Birmingham authorities to use concrete pipes for their water main 35 miles in length and 5 feet in diameter. The fact that Birmingham is the centre of very large steel and iron works makes the choice of concrete piping the more significant, and as it is anticipated the cost of steel and iron will tend to increase it seems probable that the example of this progressive municipality will be followed by others." We understand that Sir Percy Fitzpatrick, Chairman of the Hume Pipe Co. (S.A.), Ltd., was negotiating for the construction of this pipe line prior to his departure for England.

State-Aided Apprenticeship.

Attention was recently drawn in our columns to the scandal in connection with the refusal of the Trades Unions to help apprentices to complete their terms in the South African engineering works. A useful example now comes from England in the shape of a scheme under which State assistance is to be given to those engineering and other apprentices whose term of service had been interrupted by the war. The position, for these lads, is serious; with a smattering of technical knowledge they were torn from their studies and sent to the war. Under the Government scheme, which should assist not only indentured apprentices but those who were not "bound" but were admittedly learning the trade, those who were under the age of 20 at the time of enlistment will receive State aid in completing their training. For some obscure reason it is not proposed to include those who joined the colours in the last year of their apprenticeship, but where this inflicts hardship it is probable that some modification would be made. In no case will the period of assisted training exceed two years, and during that time a Government grant will be given which shall be equivalent to one-sixth of the journeyman's standard rate, plus war bonus, and during the first year of this training the employer will be required to pay a wage equal to seven-twelfths of a journeyman's wages. The person trained will thus receive three-quarters of the expert man's rate of pay during the period of training, which will enable him to devote all his energies to his work and his studies without having to seek for other or spare-time occupation to supplement his income. The Union Government might well take a lesson from this example.

TOPICS OF THE WEEK.

LESSONS IN INDUSTRIAL STATESMANSHIP.

News of labour unrest continues to fill the cables and the papers from every part of the known world. South Africa is stirred by these rumours and tidings through every fibre of its industrial life; and in the circumstances it would be surprising if it were otherwise. The mining industry, the largest as well as the most sensitive of our industrial activities, and therefore in closest touch with world influences and tendencies, was naturally the first to feel the stirrings of discontent. Fortunately for the industry and the country, during the past few critical years there were men at its head of sufficient breadth of vision to meet the trouble in the right spirit, and to deal with it according to the expert dictates of the science of industrial statesmanship. The result is that, despite the efforts of extremists on both sides and the openly expressed doubts regarding the wisdom of what was called the weak policy of considering the men's point of view, the mining industry is to-day close reefed against the storm to a degree not approached by any other industry in the country. The only trouble to be apprehended in the local mining world comes from outside, from its liability to be dragged into the quarrels of other, less fortunate, industries. That, it seems to us, is the moral of the address delivered by the President of the Chamber of Mines at the annual meeting this week, and it is to be hoped that the lessons embodied in that address will not be lost upon the responsible leaders of the other industries of the country. A full report of the proceedings at the annual meeting of the Chamber will be found in another part of this issue, and will be seen to provide, in addition to the usual review of the industry, an eloquent and convincing *apologia* for the policy of the Chamber of Mines towards the labour questions of the industry. Having set its own house in order, however, the Chamber now sees that it is necessary to become to some extent its "brother's keeper" by endeavouring to assist other industries with the benefit of its experience. We note that Sir Robert Hadfield attributes the present labour troubles in England in part to the fact that many employers had failed to advance with the times. The criticism is doubtless equally true in South Africa. "The movements to-day," says Sir Evelyn Wallers, "on the part of workmen the world over towards reasonable working hours, the maintenance of good wages and a definite and improved status in industry are perfectly legitimate and right aspirations, and every thinking man in the employing and managing sections of the community recognises that fact." And again: "It is a fact that there is considerable pressure on other industries in this country for fewer hours, accompanied by either the maintenance of, or an increase on the existing wage; and as most industries in the Union—and its prosperity as a whole—are allied to, or alternatively, rest upon the successful carrying on of the mining industry, it is vitally necessary for us in the interests of all to study the question with the utmost care." Sir Evelyn was very easily able to show that increased wages must clearly be met out of increased production or increased efficiency, and Sir Robert Hadfield, we note, thinks that increased production must be secured by speeding up the mechanical element rather than the human element—a counsel of perfection probably applicable in a greater degree to industries in South Africa other than mining. Very naturally the President of the Chamber of Mines holds the view that the salvation of those other industries lies in the method of round-table conferences that has proved so successful in the mining industry. Indeed, the first and last article in his faith is the belief in the value of Conciliation or Reference Boards based on the principle of "the development of mutual goodwill, the realization of joint responsibility," and "the equal representation of employers and employed." If we might offer a suggestion it is that this principle be applied to its logical limits in South Africa to-day by the creation of a National Industrial Board or Council. Briefly,

the scheme is a triple organisation, somewhat on the lines of the League of Nations. The first step in this would be the formation of a permanent Employers' Central Council, composed of representatives of all employers' associations. This body would appoint a small and carefully chosen Executive Council. The second stage would involve the establishment by organised labour of bodies corresponding to the Employers' Central and Executive Councils. The latter would need to represent all industries, and possibly the best means of securing the appointment of such a body would be by the agency of the Federation of Trades. Its function would be similar to that of the Employers' Central Council—to focus the opinions of the workers on matters affecting their own well-being and that of the industry in which they happen to be engaged. The Trades Union Central Council would then be required to appoint an Executive Council of equal size to that of the employers, and with the same functions. The third step would be to unite the two executive councils into one national board of industry, which should be the supreme authority outside Parliament on all labour questions. It should sit frequently and at regular intervals, and should make the closest possible study of the industrial barometer in order that it might take the promptest measures to avert threatened storms. Prompt action would be one of the two most essential factors in the success of the scheme. The other would be the personnel of the board. The members of both sections of it must be unquestionably in possession of the confidence of the interests they represent. An organization of this sort, it seems to us, would be compatible with the high ideals of the President of the Chamber of Mines, and would possibly secure for the other industries of South Africa the same measure of peace and stability that the Boards of Reference have secured to the mining industry.

Rezende Ore Reserves Increased.

The following cablegram has been sent to London by Rezende Mines, Ltd.: "Reserve of ore 31st December 175,374 tons, value 17½ dwts. reduced 12½ dwts., showing increased quantity 29 per cent., value 40 per cent. No. 11 level: Indications reef coming in probably western limit of shoot. No. 5 level: Last 80 ft. sampled 25 dwts. over 46 ins. Whole mill running. Labour position has improved. Have every confidence in mine provided development is accelerated, which is being attended to."

* * * *

"C.M.S." Enemy Shares Considerably Over-Applied For.

With regard to the purchase from the Public Trustee of the enemy shares vested in him, and their offer to non-enemy shareholders of the Consolidated Mines Selection Company, the secretary states that the result was very successful. Applications for shares were received from over 2,200 shareholders, and the total number of shares applied for considerably exceeds the number available. After satisfying applicants for their *pro rata* proportions—namely, one in three of their registered holding at 20th January last—there remained at the disposal of the directors a number of shares sufficient to enable them to make to applicants for additional shares an allocation at the rate of 30 per cent. of their holdings, plus small adjustments to bring total shareholdings to multiples of five. The large number of applications, also the time occupied in transmission of telegraphic advices between Johannesburg and London, have caused some delay in issuing notices of allocation, but this matter is now in hand, and shareholders may expect to be advised of their allocations in the course of a few days and to receive a refund of moneys paid in excess of requisite amounts. Transfer deeds will be prepared and issued to shareholders so soon as they have been signed by the Public Trustee. Meanwhile shareholders are informed that the shares in question will be entitled to the dividend declared in respect of the year ended 31st December last, arrangements having been made with the Public Trustee that any dividend on the shares shall be paid direct to the applicants.

THE WORLD'S "GREATEST" MINE.

An Interesting Survey—The Rand's Lead in Gold Properties—The Utah Copper Mine—A Proposition with Nearly Four Hundred Million Tons of Ore in Reserve—The Ferreira's Wonderful Record—Deep Mines; The Turf Shaft and Sea Level—Oldest and Highest Mines.

Which is the greatest mine in the world? The question is an interesting one and admits of several answers. In the first place it is necessary to have some clear understanding on the term "greatest mine." A mine, according to the interpretation of the British Home Office, is any sub-surface working into which it is necessary to introduce artificial light. A mine, according to the definition of a wag, is a hole in the ground which is owned by a liar. Numerous open workings are commonly regarded as mines. The Premier Diamond Company's working outside Pretoria, for instance, constituted a mine before any shafts were sunk, and many of the quarrying propositions of North America are termed mines although they are daylight workings.

A NORTH AMERICAN UNDERTAKING.

If we are allowed this licence in regard to the definition of the word mine, and we are to take greatest as implying the largest scale of operations in terms of tonnage extracted and treated, we should be inclined to put the Utah Copper, in the United States, at the top of the list. This mine deals with close on a million tons of ore per month, and its metaliferous deposit is so great that even on this colossal scale of exhaustion the ore reserves are a third of a century ahead of current requirements.

THE RECORD OF THE FERREIRA.

The richest mine in the world, if we regard that term as implying maximum value for minimum expenditure, is probably some little known and "nuggety" gold prospect in Rhodesia or Western Australia or some small diamond prospect in South Africa which has given its lucky holder a magnificent return and then "petered out." Of the big mines, the old Ferreira, which has returned something like 4,000 per cent. in dividends, and the £1 shares of which company at one time stood at £27, has probably constituted one of the most profitable undertakings in the history of mining. One of the highest grade undertakings associated with mining of the present is the United States Smelting, Refining and Mining Company, which has a capital of £15,000,000 and treats a product worth £25 to the ton. By the way, Mr. Sidney J. Jennings, formerly of the Corner House, is vice-president of this company. The Anaconda Copper Company is another large concern which stands high in the list of the world's profit-earners. During one year of the war period this company's excess of recovery over expenditure was no less than 51 million dollars or getting on for twice as much as the annual earnings of all the gold mines of the Rand as disclosed by last month's returns.

NEW MODDER AND GOVERNMENT AREAS.

When it comes to gold mines, the Transvaal takes the lead in point of stability and profit-earning. The two leading mines of this country, the New Modderfontein and the Government Gold Mining Areas, easily outdistance the claims of any other auriferous undertakings. The Modderfontein's ore reserves at 30th June last amounted to 9,000,000 tons of a value of 8.6 dwts. per ton. The present market valuation of this property is approximately nine millions sterling. The New Modderfontein in its last financial year earned a working profit of £833,264, but for the months of July, August, September, October and November the profit on a basis of 72 600 tons per month averaged £90,285 per month or 24s. 10d. per ton, costs being at the rate of 20s. 3.7d. The Government Gold Mining Areas Company had at the end of 1918 an estimated ore reserve of 9,445,000 stopping tons of an average assay value of 8 dwts. over a stopping width of 78 inches, and the company's present normal profit-earning capacity is roughly a million sterling per annum. The capital of this company is £1,400,000, and

the shares are standing in the market at the present time at 92s.—93s., which represents a market valuation of about six and a half millions sterling. But in this connection it must be remembered that a large percentage of profit accrues to the State.

IMMENSE ORE RESERVES.

Whilst on the subject of ore reserves it is somewhat astonishing to find a mine with an ore reserve of close on four hundred million tons—an amount of ore which represents about three times the total tonnage developed on the whole Rand. A few months ago the Utah Copper Company computed its reserves of ore at no less than 369,845,558 tons, and has probably been increased since then. This North American concern treats about eleven million tons a year for an annual profit of about six and three-quarter million pounds, the yield per ton being four and a half dollars and the cost of production two dollars. The largest milling equipment under one roof of any mine is possessed by the Randfontein Central.

DEEPEST GOLD MINES.

The deepest metalliferous mine in the world is the Calumet and Hecla (Michigan), where a shaft (the Tamarack) has penetrated to a depth of over 6,000 feet. The deepest gold mine is the Village Deep, of the Central Witwatersrand. The Turf Mines shaft of this company has been sunk to a depth closely corresponding to sea-level. The Cinderella and Hercules shafts on the East Rand, the Jupiter workings and the New Chum Railway Mine, Victoria, have penetrated to depths which are not very much less than that of the Turf shaft. The highest mine in the world, *i.e.*, the mine situated at the greatest altitude, is in Bolivia. It is difficult to say which are the oldest mines on earth, but some of the ancient workings of Rhodesia, of Southern Spain and of Peru are many centuries old. Doleath, in Cornwall, is perhaps the oldest of the modern workings. The fires in the engine-house of this tin mine have not been out for over a century.

Union Corporation, Limited

(INCORPORATED IN THE TRANSVAAL.)

Notice to Shareholders.

Holders of Registered Shares in South Africa are requested to lodge their Share Certificates bearing the name of "A. Goerz & Company, Limited," at this office, in order that they may be exchanged for Certificates bearing the new name of the Company.

Holders of Bearer Warrants in South Africa are requested to lodge their Warrants at this office in order that they may be marked with the change of name.

By Order of the Board,

VERNON J. RONKETTI,
Secretary.

94 Main Street (P.O. Box 1156),
Johannesburg, Transvaal,
22nd March, 1919.

THE GREATER HEIDELBERG GOLDFIELDS.—V.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

The Sub-Nigel and its Reef—Dr. Mellor as a God Father—London Disciples of the Heterodoxy—Maraisdrift and Beyond—Mining in the Halcyon Nineties—Facts and Fancies at Uitkyk—Heidelberg: Its University and Professors—The Harvest of the Options—The Two Reef Flotation; A Complete Schedule—The Sauer-Bleloch Interests in Detail.

OUR last article (the fourth of the series) brought the survey of the Far East Rand and its presumptive annexe up to the boundary of the Sub Nigel Mine, and at this point we may resume the enquiry into the controversies and established facts of the mining field which we have for convenience sake included under the broad headline of the Greater Heidelberg Gold Fields.

being made for rapid development to meet this new shaft so as to lose no time in carrying out the programme of crushing on a largely extended scale. The ore reserve fully developed at 30th June, 1918, is estimated at 387,000 mine tons of an average value of 10·3 dwts., in addition to which the partially developed ore is estimated at 36,000 mine tons of an indicated value of 9·8 dwts.



HEIDELBERG: A VIEW OF THE TOWNSHIP.



HEIDELBERG: ANOTHER VIEW.

THE RE-BAPTISM OF THE NIGEL REEF.

The Sub Nigel's history has been briefly described in foregoing articles. The last annual report of the company exhibited an authorised capital of £775,000 with a mining area of 1,878 claims on Noycedale 71, Droogebult 350, and Varkensfontein 217. The company will also acquire about 500 mynpacht claims on the farm Grootfontein in terms of resolutions confirmed at extraordinary general meetings held a little more than a year ago. Operating with a 30 stamp battery and two tube mills, the company milled 115,780 tons in its last financial year for a profit of £91,769, working costs being at the rate of 33s. 3d. per ton. Profits have recently averaged about £7,500 to £8,000 per month, and with a view to extending the scope of the company's operations a new vertical shaft was started last year and is expected to reach the reef horizon early in the year 1920. It will command the lower ground together with a contiguous area, situated on the farm Grootfontein No. 152, of 500 claims. This recently acquired area was carefully chosen as being in line with the calculated extension of the most promising ground of the Sub Nigel. Preparations are

There never has been any question of doubt as to the identity of the reef which has been worked by this company and its neighbour, the Nigel Gold Mining Company, if we consider the identity of this reef in a purely local sense. It is the Nigel Reef, the comparatively thin and frequently erratic, but often rich, ore body upon which work has been prosecuted in a more or less sporadic manner since the late 'eighties in this particular area. But, as already stated, in 1916 the parents of the proposition rechristened their conglomerate body the Van Ryn, and at this fresh baptism Dr. Mellor stood as the geological godfather, for he had correlated the healthy infant with its bigger brothers to the north-east by his substantiation of the theory that Nigel, Van Ryn and Main Reef Leader are one and the same body. So we find the Sub Nigel emerging from the holy fount of stratigraphy probably a lustier baby because of its dipping into the magic solution of the Far East Rand. Mr. Bleloch, however, stood aghast at the sacrilege, and apparently some of the company directors of London are inclined to stand by the side of the chief apostle of the heterodox school of belief.

Speaking at the meeting of the Rhodesia Exploration Company held in London the other day, Mr. F. H. Hamilton said of the Maraisdrift property: "There is a difference of opinion among engineers as to the identity of the reef from which the Sub Nigel Company has obtained these highly satisfactory results. Some believe it to be the Van Ryn, others say it is the Nigel Reef, and that the Van Ryn Reef overlies it. Until a little over two years ago the management of the Sub Nigel Company believed they were working the Nigel Reef; then towards the end of 1916 they expressed the opinion that it correlated with the Van Ryn Reef, worked on the northern area of the Far East Rand. Then about twelve months ago came a further interesting development. In December, 1917, the management reported that in one of its incline shafts a borehole had been put up in the hanging wall and had encountered a reef. Now that is just what would be expected if the Sub Nigel Company is working the Nigel Reef and the Van Ryn Reef lies above it. Within the last few weeks the Sub Nigel Company has commenced opening up the section nearest Marais Drift. This section of the property is separated from the other section by a big fault, and it was necessary to crosscut through it. This has now been done, and in the new section nearest our property the reef is in place, and is, we understand, showing excellent values." No great amount of significance need necessarily be attached to the fact that a borehole put up into the hanging wall of the Sub Nigel property had encountered a reef. Such action and discovery might easily be accounted for by temporary loss of the reef through faulting and its subsequent location in a higher position.

It is clear, however, from the foregoing that Mr. Bleloch is not the only company promoter who desires to establish identity between the reef which exists in the property or properties with which he is connected and that great and fabulously rich ore body which is worked in the Far East Rand. Speaking at the same meeting the chairman of the Rhodesia Exploration Company remarked: "The Far East Rand is to-day the most interesting gold field in the world. Two or three years ago it was only believed in by a handful of enthusiasts; to-day nearly every one of the great South African houses holds interests in it. During the last few weeks fresh evidence of its value has been forthcoming. I do not want to excite anyone's optimism unduly, but there are two points you should keep in mind: one is that in Marais Drift there is an element of practically assured value, as well as an element of speculation. We are almost next door to the Sub Nigel property. Now you may take it as nearly certain as anything of this kind can be that the reef which the Sub Nigel is working, whatever its name be, underlies a great part of Marais Drift. That is the element of certainty. Then it is believed that the Van Ryn Reef, which, as you know, is enormously valuable, also runs through Marais Drift. That is the element of speculation I referred to; but I need not tell you that it opens up very great possibilities. The other point I want you to keep in mind is this—whenever you hear the Far East Rand spoken about (and you will very often in the near future) you will realise that this company occupies a most important position practically in the middle of it."

MARAIS DRIFT AND POORTJE.

The farm Marais Drift No. 4 lies immediately to the south of Noycedale (Ryan Nigel G.M. Co.) and east of Spaarwater 154 (Lace Proprietary Mines-Barnato Bros.) and of Klippportje 228, on which the New H.E. Proprietary have interests. The greater part of Marais Drift is held by the Amalgamated Properties of Rhodesia, Ltd., and African Farms, Ltd., whilst the south-eastern corner appears on the map as being under the control of the Consolidated Gold Fields of South Africa. A good many years ago a fair amount of work was done on this property on its eastern side. Two incline shafts put down in this portion of the property exhibit a reef lying on a shale footwall and there can be no doubt that the banket bed disclosed in this shaft is correlative to the reef worked in the Nigel and Sub Nigel mines. The directors and technical

advisers of this concern in the past appear to have sinned against one of the main tenets of the great faith of sound mining. The ore actually developed and in sight on the whole property is very small. But one observes a magnificent mill site replete with admirable mortar box foundations the concrete blocks of which have weathered the storms of more than one decade and a floral invasion of cosmos and weeds. As an exhibit in botany the mill that was never completed is a pleasing sight, but from the point of view of a mine shareholder it is a depressing spectacle. But it may yet prove of value if only to stand as a lesson and a warning in solid masonry to all those who are in too much of a hurry to hear the roar of the falling stamps and who unduly hasten to address a board meeting with the words, "Gentlemen, we have commenced crushing." The first Commandment in the pentateuch of sound mining clearly lays it down "Thou shalt not crush prematurely," and the logical sense of that command has come to be recognised in every mining field of the world.

About the middle of Marais Drift the reef appears to have taken a gradual bend to the east judging from the old workings on the Gold Fields' section of the property. It is, however, contended by one or two geologists that the true line of the Nigel lies to the west of the old Gold Fields workings and that the reef disclosed on the southern portion of Marais Drift is not the Nigel at all. This reef would then appear to cross the extreme south-west corner of Rietpoort No. 89 and continue through that portion of Poortje No. 125, in which the Crown Mines have an interest through their absorption of the old Paarl Central assets. It is a trifle curious to come across an isolated interest of the one-time glory of the Central Rand down in this remote corner of the fields, and one is tempted to express the fervent wish that fortune will here be kinder to the mighty amalgamation of properties embodied in the Crown Mines than it has been of late years to the great consolidation in its mid-Rand sphere of activities. Here, too, we find the Consolidated Mines Selection (otherwise Rand Selections Company) in possession of a portion of Poortje. On this latter area prospecting pits were sunk long ago on the line of the Reef discovered to the north, and the reef has been disclosed as a comparatively thin body of conglomerate lying again on a shale footwall. It is found again on Houtpoort maintaining an approximate north and south line of strike, and a flat dip to the west. Between Poortje and Houtpoort, and almost in a line with the township of Heidelberg it is contended that the line of this ore body takes an S-shaped curve and after traversing the farm Bothaskraal No. 207 is to be found on the extreme eastern side of Blinkpoort 253, recrossing Bothaskraal and the southern portion of Poortje 125 with an approximate E. and W. line of strike and a dip to the north. There are old workings approximately on the corner of this bend to the south-east of Heidelberg on the main road to the Free State, but the delvings of the workers of more than two decades ago seem to have come to naught from the point of view of material output.

THE OLD TIME WAY.

This is not to be marvelled at if it is true that on this unimportant property four canteens, a racecourse and entertainments of a more disreputable nature were considered to be necessary for the few white men who worked there. They did things on the Transvaal gold fields in those far away early days in a very different manner to the present period. Stratigraphy and development were less important, it seems, than the price of liquor or the charms of the latest lady arrival on the property. Those must have been halcyon days for the workers but lean times for the innocent shareholders in distant England!

UITKYK; AND A SURVEY.

We have forced the pace of our survey a little too much recently, and we now propose to retrace our steps northwards to the farm Uitkyk No. 97. Uitkyk lies east of the township of Nigel, and it is an important point in our

survey both from a stratigraphical point of view and in a lesser degree on account of its value as an observation post. Uitkyk is crowned by a high kopje on which banded and magnetic slates of precisely similar appearance to those found on Hospital Hill, Johannesburg, occur. These slates show little evidences of contortion on the western slopes of Uitkyk Hill, but on the eastern dip they are contorted to a marked degree. The late Dr. Corstorphine regarded the section of the Witwatersrand beds from Uitkyk to Noycedale as a very typical one. He wrote of this section in 1916: "A study of it and comparison of the complete succession of rocks from the basal quartzites (Orange Grove Quartzites) resting on the granite boss to the east up to the Elsburg beds afford sufficient points of correlation with the Central Rand section to establish the identity of the Nigel Reef and the Main Reef series." The view from Uitkyk is magnificent, and though less instructive than the geology of this locality the scene from the hilltop is certainly an informative spectacle. Far away to the north-west one can see the snow-white sand dumps of the East-Central Rand. Nearer at hand to the north are the headgears and smoking chimney stacks of a portion of the great Far East Rand. One can view Springs and the Daggafontein shafts west of Springs, the broken link in the chain of industry between Daggafontein and the Nigel-Southern Van Ryn group, the township of Nigel lying nearly four miles away to the west on the slope of the flat lying strata which dips from Uitkyk, the town of Heidelberg to the south-east and the far-away hills reaching to the Vaal which one day perhaps will frown down on mines that have not yet emerged from the chrysalis stage. Here is to be obtained a view of the greatest gold fields of this or any other age, and who will be so bold as to determine the economic limitations of the vast basin into which nature has compressed gold with so much fickle prodigality? One can in imagination see many new rows of headgears on the green sward of the gently undulating veld. Beyond the Nigel mines to the west is the great farm Spaarwater 154 of the Laee Proprietary Mines, recently acquired by Messrs. Barnato Bros., and north of it Grootfontein of the Consolidated Gold Fields, both proved by boring to come within the scheme of enlarging the South-East Rand, whilst on their dip lie the Vlaktefonteins of Lewis & Marks and the Laee Proprietary. Beyond Daggafontein are other vast areas on Grootvlei and Palmietkuil, and east and south-east of Daggafontein, Rietfontein and Vlaktefontein of the Lydenburg Gold Farms. There are no towering headgears there to mark the line of the auriferous conglomerates, and some will have it that these acreages contain no Modderfonteins! The scene, however, is too far-reaching and dazzling in its industrial glamour to allow of the mere petty details of geology to come into one's mind. But it is these details that determine the line of the headgears, the mills and the cyanide plants and the battle front of industry. And so since we must come down to realities and think in terms of inch-dwts. instead of in illimitable landscapes all ensplendoured with the golden brush of nature, it is as well not to stay too long on Uitkyk. We will therefore retrace our steps to Heidelberg, that well-named little town which is to-day the university of the professors of controversy and which may in time be changed from a somewhat sleepy and parochial dorp on the line of the Natal-Johannesburg railway into a new Benoni or a newer Springs.

HEIDELBERG AND ITS PROMISE.

Heidelberg is already clamouring for a new railway. At the Heidelberg Town Council meeting of a fortnight ago the reply of the Minister for Railways and Harbours was read in regard to the Heidelberg-Springs railway, stating that there was no prospect of this being undertaken at "an early date." Next day there appeared in *The Star* a report of the interview between the Springs deputation and the Railway Board, in which it is stated that the Board "admitted that this line would have to be considered in the near future." Probably "an early date" means during the next financial year, and "the near future" means about the year 1921 or 1922, comments the *Heidelberg News*. Heidelberg houses the representatives of both the orthodox and hetero-

dox colleges of geological thought. Mr. John Moffat, of the orthodox Southern Rand Mines, resides there, and Mr. W. Smith, the energetic manager of a number of propositions which rest on the new geology, has made his headquarters in Heidelberg. Here too we find Dr. Rogers, of the impartial and academic Government Geological Survey, in residence. All round the town land is being taken up, and farmers, the State, the Municipality and others are reaping rich harvests in option moneys and claim licences. Diamond drills are busy and shafts and trenches are searing the face of the veld. Heidelberg is indebted to Mr. William Bleloch for the greater part of this activity. And at this point it may be as well to present a statement as to the propositions which are concerned with the new geology.

NEW FLOTATIONS.

In the following schedule therefore will be found particulars of the concerns which either owe their birth or their rejuvenation to the two-reef theory.

HOUTPOORT, LTD.

Directors: H. Sauer, R. Bleloch, Sir Lionel Jacob, Col. C. H. Villiers. *Capital:* £200,000 in 2,000,000 of 2s. (to be increased immediately to £300,000). *Registered* in 1902. *Properties:* 800 acres freehold Houtpoort or Tweefontein No. 309, Heidelberg. Mineral rights of 1,546 acres Klippoortje (No. 228, Heidelberg), option over mijnpacht and other portions of Tulipvale (No. 13), in all 1,036 acres. Option over 1,500 acres of Goeverwaching (No. 306). Prospecting and developing work on Klippoortje and Tulipvale.

BEST!

THE term "Best" as a quality indicator of Belting is used so indiscriminately as to be of little value. We are content to claim that

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is all a British product ought to be, and, owing to excellence of results, it is regarded by discriminating users as a STANDARD of its particular class. Our stock is most comprehensive, and prices competitive.

Geo. Angus & Co.

Limited.

JOHANNESBURG.

EASTERN VAN RYN AND MODDERFONTEIN GOLD REEFS, LTD.

Directors: Hans Sauer, R. Bleloch, Col. Villiers, R. S. Charles. *Capital:* £150,000 in £1 shares. *Properties:* 1,151 Claims on Heidelberg Townlands. (Borehole being sunk, and various prospecting shafts.)

DEEP LEVEL CLAIMS OR TOWNLANDS COMPANY.

This is not yet in actual existence and may be eventually joined to Eastern Van Ryn and Modderfontein Gold Reefs. *Promoter and Owner:* Dr. Hans Sauer. *Properties:* 1,000 Claims on Heidelberg Townlands adjoining above. (No work yet being done.)

VAAI RIVER GOLD ESTATES, LTD. (in liquidation), being reconstructed as South East Rand Investments, Ltd.).

Vaal River Gold Estates.—Capital: £180,000 of 2s.; issued, 766,668 shares of 2s., £76,666 16s. *Directors:* R. Bleloch (chairman), W. N. Morrison (and others?) *Interests:* 60,000 10s. shares Nigel Van Ryn; 15,000 2s. shares Houtpoort; 10,000 5s. shares New Albion; 8,000 £1 shares Boschfontein; 2,000 10s. shares Oceana Development; 8,000 £1 shares Lomah Banket; 1,000 £1 shares E.V.R. and Modderfontein; 1,000 10s. shares Rhodesian Consolidated; 1,000 £1 shares Sub Nigels (10s. paid); 1,000 Daggafontein Options; 5,000 S.V.R. Options; 1,000 Henderon Options; $\frac{1}{2}$ interest in New Cijferfontein Syndicate; $\frac{1}{4}$ interest in Bloemendal.

South East Rand Investment Company, Ltd.—Capital: £100,000 in 400,000 shares of 5s. each. To take over above as follows:—1 share of 5s. fully paid for every 5 Vaal shares; 1 share of 5s. (3s. 9d. paid) for every 5 Vaal options; 20 shares of 5s. fully paid for every £5 Vaal debenture bonds. *Directors:* R. Bleloch, W. N. Morrison, L. C. Lawson.

RHODESIAN CONSOLIDATED, LTD.

Properties: (Other than Rhodesian) 600 claims of Vogelstruisbult (No. 3699 Heidelberg).

NEW ALBION TRANSVAAL G.M., LTD.

(Albion G.M. reconstructed.)

Directors: S. S. Kennedy, G. Parkin, F. L. Wilmot. *Capital:* £100,000 in 400,000 shares of 5s. *Property:* Mineral rights of 3,000 acres on farm Boschfontein No. 271, Heidelberg. (No work being done at present.)

NEW CIJFERFONTEIN SYNDICATE, LTD.

Property: Option over Valsfontein (see New Albion Transvaal G.M. above) sold for £4,500 in cash and call on £50,000 of New Albion capital at par.

ROODEKLIP GOLD MINING COMPANY, LTD.

(Promoted by African Construction Corporation, Ltd.)

First registered 1902, Transvaal. *Capital:* £150,000 in £1 shares. *Property:* 187 claims on Marievale (No. 296), also option over portion of Goeverwachting No. 306. (No work yet done.)

LOMAH BANKET, LTD. (Rhodesian Co.)

Property: Option over two portions of Sterkfontein (No. 204), area 2,093 morgen—3,149 mining claims. *Capital:* £200,000. (No. work yet done.)

NIGEL VAN RYN REEFS, LTD.

Capital: £100,000 in 200,000 shares of 10s.; shares issued, 20,087 (September 20th, 1918). *Directors:* R. Bleloch, H. Edwards, Geo. Parkins. *Property:* 257 claims on Marievale (100 from Vaal River Gold Estates, 157 from Omnum assets.) Fair amount of prospecting and developing work done; 10 stamp battery, compressor, etc., being erected. Crushing to be started at early date.

FAR EAST RAND MINES, LTD.

Director: R. Bleloch. *Properties:* Option contracts over Sterkfontein (No. 204), 1,470 acres; Schikfontein (No. 269), 4,866 acres; Brakfontein, 1,606 acres. No work yet done.

ABBEYVILLE CO., LTD.

Director: R. Bleloch. *Properties:* Options over: Barpardskop (No. 272), 808 acres; Driefontein (No. 280), 3,000 acres; Herpsfontein (No. 234), 3,000 acres; Schikfontein, 1,464 acres; and Kalfiskraal, 460 acres.

SOUTHERN VAN RYN REEFS G.M. CO., LTD.

Directors: Senator the Hon. W. K. Tucker, D. Christopherson, R. Bleloch, W. E. Bleloch, A. E. O'Flaherty, Lieut.-Col. F. Leslie Brown, D.S.O., Capt. C. Hely Hutchinson. *Issued capital,* approximately 320,000, with power to increase to £61,500; cash resources about £85,000. *Properties:* 1,662 claims on Varkensfontein (No. 217) and Marievale. Considerable amount of prospecting and developing work done and deep level shaft located.

OCEANA DEVELOPMENT COMPANY.

Registered: 1892, reconstructed in 1912. *Directors:* Hans Sauer (chairman), A. Oppenheimer, R. Bleloch. *Capital:* £75,000 in 150,000 shares of 10s. each. *Properties:* Freeholds and mineral rights of: Eendracht No. 267; Kalfiskraal No. 290, Heidelberg district; with many other properties in the Transvaal and elsewhere; total area, 55,296 acres freehold in the Transvaal, and in Belgian Congo. Work done so far, borehole being sunk on Eendracht by Dr. Sauer, under agreement with the Oceana Co.

BOSCHHOEK PROPRIETARY, LTD.

Directors: P. Carter, Col. Paget. *Capital:* £360,000 shares of £1 each. *Property:* Boschhoek (No. 270), Heidelberg, 1,114 acres freehold. Borehole being sunk by agreement with Dr. Sauer; shares mostly owned by Heidelberg Estates and Exploration Co., Ltd.

Such in brief are the flotations which have been launched on the thesis that the Van Ryn Reef overlies the Nigel. In the foregoing we have only touched on the present activities of these concerns. Space presses. We have no illimitable strata of newspaper pages at our disposal, and a more detailed account of the highly interesting work that has been and is being done around Heidelberg and to the south will have to await the disposition of our next issue.

(To be continued.)

GOVERNMENT NOTICE.

DEPARTMENT OF DEFENCE.

Tenders for Purchase of Tin Plate

Tenders are hereby invited for the Purchase of Tin Plate from the Department of Defence, lying at Base Supply Depot, Table Bay Docks, Capetown, as follows:—

110 CASES PRIME COKE TIN PLATE, 20in. x 28in., each case containing 112 sheets, weighing 215lbs. nett, and loose sheets weighing 18,996lbs., representing approximately 88 cases. Total nett weight, 107,146lbs.

Sealed Tenders on the official form superscribed "Tender for the Purchase of Tin Plate" must be addressed to the Chairman of the Defence Departmental Tender Board, Artillery Barracks, Pretoria (P.O. Box 435), and must be in his hands by 11 a.m. on Friday, the 11th day of April, 1919.

Tender forms and any other particulars may be obtained on application to the Director of Supplies, P.O. Box 435, Pretoria; the Assistant Director of Supplies, P.O. Box 684, Durban; or the Officer Commanding Base Supply Depot, Table Bay Docks, Capetown.

The Board reserves the right of accepting any portion of a tender without the whole, and does not bind itself to accept the highest or any tender.

All tenders are bound by the conditions on the official tender form.

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SOUTH AFRICA AND KING COAL.—VIII.

Mr. S. B. Bilbrough on By-Products—The Question in this Country—Calorific Values vs. Sulphate of Ammonia, Tar and Benzol.

[We are indebted to Mr. S. B. Bilbrough, B.A., the well-known local consulting engineer and analyst, for the following interesting article on the coal by-product question in this country. Mr. Bilbrough sounds a rather pessimistic note on this subject, but as we said last week it is as well to have both sides of the question.]

Considerable interest, writes Mr. Bilbrough, has been shown recently in the discussion on by-products from coal, and colliery owners have been often twitted for not taking the plunge and going in for by-products, etc., and the "waste" of coal has frequently been cast up against engineers and others—that is to say, the "waste" in our use of the coal. I am not referring to waste mine dumps of coal at the collieries themselves. It is said, "Why don't you produce tar, carbolic acid, benzol, etc., which would produce at least some 15s. per ton of coal, and you are only getting less than half this return by sale of the coal direct?"

Let us look briefly into this waste of our glorious and much-neglected by-products in coal, which we are told it would pay to produce without any reference to the primary product of coal, viz., its calorific value.

ONE TON OF COAL PRODUCES A REVENUE OF—

(1) By burning and by the generation of steam and sale of power only, 33s. (2½ lbs. of coal per unit at 5d. per unit), or some 45s. if gas engines and producers are used.

(2) In coke ovens by sale of coke only, about 36s. (60 per cent. coke at 60s. per ton of coke).

(3) By tar production and sale of tar or its distillates only, 9s. (12 gallons at 9d.).

(4) By low temperature distillation and sale of oils only, 15s. (say, 20 gallons at 9d.).

(5) By Mond gas producers and sale of sulphate of ammonia only, 7s. (This figure is one-fourth of the total revenue derived from 140 lbs. of sulphate at £20 per ton, because three-fourths represent sulphuric acid manufacture and only one-fourth can be credited to the coal, viz., the ammonia.)

Items (1) and (2) are primary products, and (3), (4) and (5) are by-products. Item (1) is the value in shillings of the "calorific value" of the coal. Item (2), viz., coke, is also "calorific value" because the coke is ultimately burnt. Items (3), (4) and (5) are the values of the by-products only, and are not "calorific value" but substances.

It is therefore obvious that unless the "calorific value" of the coal is made the chief feature of revenue by its sale as power (including coke) that it would be a much greater "waste" to make the by-products only and to neglect the "calorific value." Where calorific value is therefore a glut in the market it is "waste" of coal to make by-products, even though it might pay. To sell coal for efficient burning and consequently the efficient generation of power, is one of the least wasteful methods of using coal, and not the most wasteful, as has often been argued.

In order to conserve our coal (the most valuable mineral in the world) its by-products should remain by-products, and the one primary product, viz., "calorific value" (which includes power and coke) should never be displaced, but always given the first place. "Calorific value" will remain a glut in the market until large industries are developed, particularly in the neighbourhood of the colliery sites, and large industries will only develop with population, and so it boils down to the old political question—immigration and efficient marriages.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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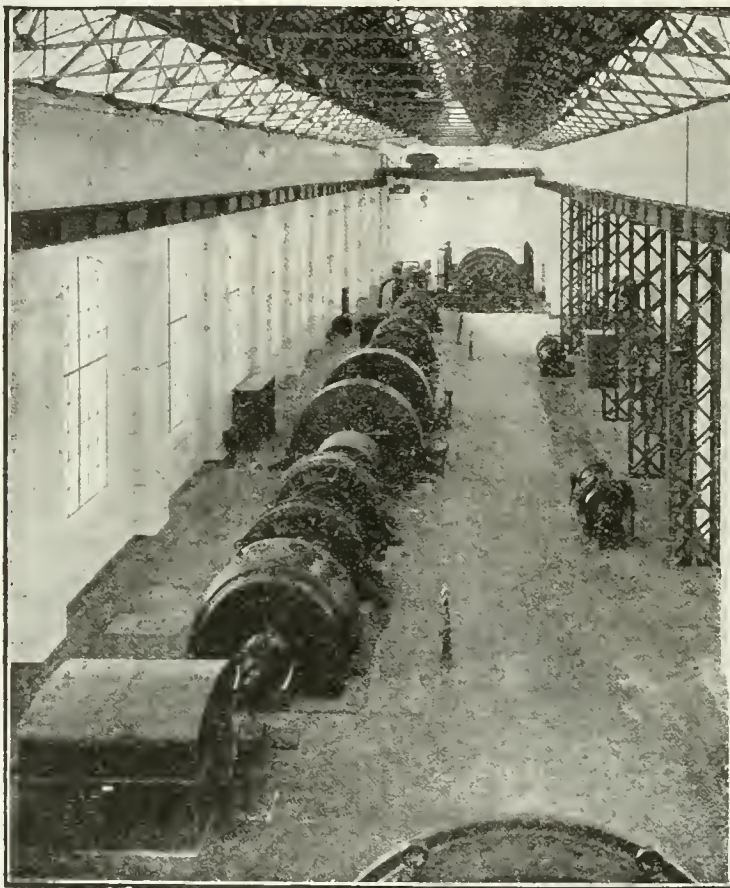
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WHAT THE UNION MINES BUY.

£15,267,870 Spent in 1918.

The following is the official table prepared by the Mines Department of stores consumed by the mines in the Union of South Africa during the year 1918:—

	Weight or Quantity.	Value.		Weight or Quantity.	Value.
Bags	—	£24,765	Iron—(a) Bar and angle (lbs.)	1,845,223	79,638
Belting (including laces & fasteners)	—	182,196	(b) Galvanized	—	30,550
Boiler fluid	—	5,158	(c) Sheet (lbs.)	76,023	2,629
Bricks	—	52,388	(d) Pig (lbs.)	409,182	3,773
Brushware	—	15,554	Ironmongery—		
Candles (lbs.)	11,011,731	449,385	(a) Bolts, nuts, washers, and rivets (lbs.)	3,308,680	99,459
Carbide (lbs.)	2,691,469	67,321	(b) Screws and nails	—	40,229
Castings—(a) Brass	—	41,930	(c) Locks, hinges, staples, chains, etc.	—	17,196
(b) Iron	—	120,103	(d) Other	—	11,402
Cement—(a) Casks (No.)	218	441	Lamps and spares	—	19,267
(b) Bags (No.)	188,909	82,544	Lead—(a) Pig (lbs.)	239,143	3,761
Charcoal	—	7,461	(b) Sheet (lbs.)	18,109	771
Chemicals and assay and smelting requisites	—	148,198	Lime—(a) White (bags)	475,381	119,157
Cloth (brattice & filter) and matting	—	27,992	(b) Blue (bags)	26,075	5,807
Coal-cutting machines (No.)	111	9,486	Lubricants—(a) Oils (gallons)	891,851	166,506
Coal-cutting machine spares	—	14,307	(b) Grease and tallow	—	118,068
Coal—(a) Smithy (tons)	20,056	29,093	Machinery and machine tools (as detailed in Annexure B)	—	533,215
(b) Steam (tons)	1,931,342	1,092,111	Machinery spares, other than electric	—	277,204
(c) Other (tons)	133,926	52,734	Mercury (bottles)	2,335	52,612
(d) Duff and dross (tons)	385,898	93,232	Metals (anti-friction)	—	31,239
Coke (tons)	9,006	63,205	Motor-cars and accessories	—	21,818
Compressed air (purchased)	—	342,550	Oils, other than lubricating—		
Cyanide (lbs.)	6,778,722	368,259	(a) Transformer (gallons)	14,353	3,222
Disinfectants and hospital requisites	—	43,289	(b) Other (gallons)	64,850	10,211
Electric machinery (as detailed in Annexure B.)	—	221,364	Gilskin suits and gumboots	—	25,909
Electric machinery spares	—	90,161			
Electric power and light (purchased)	—	1,493,185			
Explosives—					
(a) Blasting gelatine (cases)	33,944	106,595			
(b) Gelignite and gelatine dynamite (cases)	540,264	1,230,069			
(c) Dynamite & Ligdyn (cases)	106,303	182,817			
(d) Other explosives (cases)	16,115	41,471			
(e) Detonators	—	81,548			
(f) Electric detonators (or electric fuses)	—	13,270			
(g) Safety fuse	—	244,459			
(h) Lighting torches (tyisa sticks)	—	15,157			
Fencing and wire netting	—	6,345			
Fodder for stables—Bran, chaff, mealies, forage, etc.	—	60,318			
Foods, etc. (supplied free to coloured labourers)—					
(a) Beans (lbs.)	6,972,374	38,229			
(b) Dhall (lbs.)	189,078	2,414			
(c) Rice (lbs.)	3,376,733	41,982			
(d) Meal (mealie, Kafir corn, etc.) (bags)	731,116	565,585			
(e) Malt and cereals for beer	—	37,762			
(f) Meat (lbs.)	36,088,381	601,074			
(g) Fish (lbs.)	294,935	4,214			
(h) Salt (bags)	10,767	3,746			
(i) Groceries, coffee, sugar, oil, ghee, molasses, etc.	—	66,605			
(j) Sundry food, including bread	—	213,621			
(k) Vegetables	—	64,199			
(l) Medicines, etc.	—	11,030			
(m) Clothing	—	6,366			
Foundry requisites	—	2,096			
Hand tools (picks, shovels, hammers, etc.)	—	150,948			
Hose fittings	—	31,427			
Hosing (steam, suction, rock-drill, etc.)	—	79,697			

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	Weight or Quantity.	Value.
Packing	—	65,136
Paint, tar, driers, etc.	—	33,840
Paraffin (cases)	35,546	32,741
Petrol (cases)	18,288	29,975
Pipes and pipe fittings	—	448,343
Rails, crossings, sleepers, etc.	—	274,231
Rock drills (No.)	2,588	100,180
Rock drill spares	—	287,646
Ropes—(a) Wire	—	259,823
(b) Vegetable fibre	—	16,583
Screening	—	33,562
Shoes and dies (lbs.)	12,756,561	207,232
Skips, cages, kibbles, and spares ..	—	14,695
Soap (lbs.)	630,926	13,523
Sodar (lbs.)	1,166,646	3,273
Stationery and printing	—	95,808
Steel—(a) Bar, tool, cast, etc. (lbs.)	1,427,117	37,961
(b) Sheet (lbs.)	5,751,234	106,174
(c) Hand drill (lbs.)	2,548,594	67,142
(d) Rock drill (lbs.)	6,281,335	275,003
(e) Other (lbs.)	1,304,544	29,277
Timber—		
(a) Building material (ceilings, floorings, doors, etc.)	—	41,539
(b) Oregon, pitch pine, etc.	—	299,193
(c) Mining poles and lagging	—	171,677
(d) Deals	—	96,471
(e) Other	—	77,918
Tube mill requisites—		
(a) Pebbles and flints	—	959
(b) Liners	—	76,349
(c) Other requisites	—	8,395
Trucks and spares	—	120,645
Waste	—	16,348
Water (purchased)	—	184,293
Wood fuel	—	18,419
Zinc and zinc discs (lbs.)	6,303,821	275,417
Sundry articles not specified above...	—	266,624

Total value ... £15,131,798

TOTAL EXPENDITURE STORES—YEAR 1918.						
	Gold Mining Industry. £	Diamond Mines. £	Coal Mines. £	Base Mineral Mines. £	Works. (Lime, Flint, and Gypsum.) £	Total. £
Transvaal .	12,982,696	122,778	512,101	272,246	58,221	13,948,042
Cape	35	449,311	125	89,484	25,637	564,592
O.F.S. . . .	—	175,053	78,085	—	2,191	255,329
Natal	739	—	493,594	655	1,919	499,907
Union of S.A.	12,983,470	747,142	1,083,905	362,385	90,968	15,267,870
Year 1917 .	12,704,839	688,801	996,242	453,398	79,985	14,923,265
Year 1916 .	12,320,502	360,455	798,611	448,037	67,623	13,995,258
Year 1915 .	10,935,383	139,521	617,819	343,150	46,498	12,082,371
Year 1914 .	10,277,087	969,325	643,158	291,879	43,086	12,224,535
Year 1913 .	10,633,152	1,645,219	643,256	395,504	45,774	13,362,905
Year 1912 .	10,311,940	1,466,151	523,025	307,135	51,796	12,660,047
Year 1911 .	11,714,755	1,450,127	544,782	305,830	55,614	14,071,108

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THE DEVELOPMENT OF WEST SPRINGS.

The consulting engineer's report on West Springs, Ltd., for 1918 states: Construction work in connection with the sinking plant at both shafts was proceeded with, and good progress was made with the erection of the necessary buildings, quarters and compounds. At the end of the year No. 1 shaft was sunk to a depth of 74 feet, of which 60 feet were timbered. At No. 2 shaft the collar set was completed and preliminary sinking was about to be commenced. The west haulage from the south shaft, Springs Mines, was extended into your company's area, and at the end of the year a distance of 149 feet had been driven. A chamber for a haulage engine had also been cut, a distance of 29 feet being accomplished. The details of sampling results are given in the acting manager's report. On the 23rd February of the current year a serious subsidence occurred at No. 1 shaft, which at that time had reached a depth of approximately 90 feet. Fortunately, no lives were lost. The ground on the east side of the shaft gave way, resulting in the collapse of the shaft. The movement of ground probably originated in consequence of the heavy rains experienced previous to the accident. The subsidence has since been filled in, but taking into consideration the nature of the ground, the delay and expenditure involved, the re-opening of the shaft does not appear expedient. It has therefore been decided to move the site of the shaft a short distance and to make a fresh start.

The acting manager's report for the period ended 31st December, 1918, states: After the completion of the collar

set, etc., at No. 1 shaft, sinking was carried on by means of windlasses. At 31st December the shaft had reached a depth of 74 feet, of which 60 feet had been timbered. The collar set had been completed at No. 2 shaft. The following construction was completed during the period: Electric power and lighting lines; surface water service, temporary store and office; one staff house; sixteen workmen's married quarters at No. 1 shaft; eight blocks of workmen's single quarters at No. 1 shaft; two blocks of workmen's single quarters at No. 2 shaft; native rest houses at Nos. 1 and 2 shafts; native compound and kitchen, etc., at No. 1 shaft; workshops building; stables; road across the vleis, between Nos. 1 and 2 shafts. The following construction was nearing completion: Four boilers at No. 1 shaft; engine foundations and headgear at No. 1 shaft; transformer house; boarding house. Development from Springs Mines, Ltd.: The west haulage, Springs Mines, entered West Springs area during October, 1918. Following are particulars of development in West Springs area to 31st December, 1918: East haulage, west face: Total footage, 149; footage on reef, 149; footage sampled, 130; reef width, 17.42 inches; assay value, 3.08 dwts. East haulage, engine chamber: Total footage, 29; footage on reef, 29; footage sampled, 5; reef width, 31.00 inches; assay value, 2.55 dwts. Totals and averages: Total footage, 178; footage on reef, 178; footage sampled, 135; reef width, 17.93 inches; assay value, 3.05 dwts. The total footage driven in Springs Mines area under Clause 8 of the working agreement was 148 feet.

SPRINGS MINES CONSULTING ENGINEER'S ANNUAL REPORT.

The consulting engineer's report for 1918 on the Springs Mines states: The extension of the reduction plant being completed early in the year enabled a substantially larger tonnage to be crushed, the total being 427,610 tons, as against 313,065 for the previous year. The yield averaged 42s. 4.4d. per ton milled, working costs being 22s. 6.6d., the profit 19s. 9.8d. When compared with the results for the previous year, the yield was higher by 3s. 4.4d., costs by 5.4d., and the profit by 2s. 11d. The higher yield was due to the absence of the adverse circumstances referred to in my previous annual report. The working profit totalled £423,696, the nett profit, after deducting £8,506 additional war charges for gold realisation, being £415,190. This is an increase of £156,479 over the previous year. The outbreak of Spanish influenza and the subsequent shortage of native labour seriously affected operations during the last quarter of the year. When compared with the previous quarter, the tonnage crushed showed a decrease of over 25,000 tons, while the profit was lower by about £27,000. Development work accomplished during the year totalled 17,890 feet, of which 12,899 feet were on reef averaging 17.80 dwts. over 22.90 inches. A comparison of the results of payable development for the past two years is as follows: 1917: Payable footage, 6,440; percentage payable, 51.1; average width, 24.9 inches; average value, 23.0 dwts. 1918: Payable footage, 7,700; percentage payable, 59.5; average width, 30.3 inches; average value, 20.8 dwts. The payable ore reserve as at the end of the year was estimated at 2,368,000 tons of an average assay value of 9.3 dwts. per ton over an average stoping width of 61 inches. Compared with the estimate at the end of the previous year, the tonnage is lower by 199,000 tons and the average assay value by 0.5 dwts. The estimated stoping width is greater

by 3 inches. The decrease in tonnage is due to the elimination from the payable reserve of a large tonnage, mostly in the north shaft section of the mine, formerly regarded as payable, but which, as stoping progressed, proved to be of a value below the present pay limit. In addition to the payable reserve, there stands in the mine 436,000 tons of an estimated average assay value of 4.13 dwts. over 52 inches stope width, a large proportion of which will probably be worked at a profit at a later date. The average yield of the present ore reserve is estimated at from 38s. to 42s. per ton milled, according to the proportion and value of ore to be derived from sources outside the payable reserve. Work in the lease area proceeded satisfactorily. The sinking plant for No. 3 shaft was completed, and a total of 444 feet was sunk, of which 383 feet were timbered at the end of the year. The dolomite was passed through without difficulty, practically no water having been encountered, and the shaft is now being sunk in Witwatersrand quartzite. A plan of the underground workings to the end of the year is attached.

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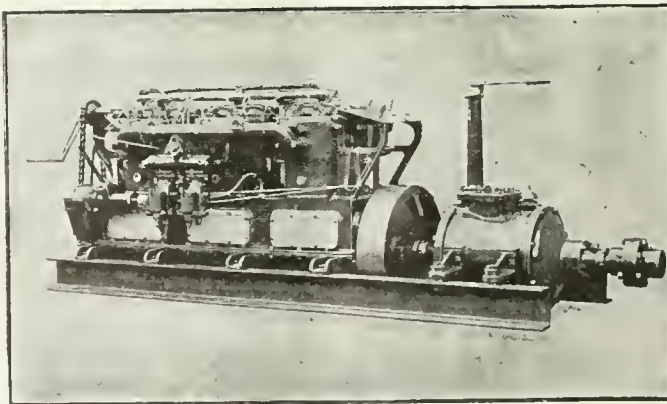
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THE YEAR WITH THE BRAKPAN MINES.

The consulting engineer's report on Brakpan Mines states: During the year a total of 617,100 tons was milled, a decrease of 60,400 tons when compared with the previous year's crushing. The yield averaged 35s. 3·9d. per ton milled, working costs being 23s. 5·6d., leaving a profit of 11s. 10·3d. The yield was higher by 10d., working costs by 3s. 2·5d., the profit being lower by 2s. 4·5d. per ton when compared with the corresponding figures for the previous year. The outstanding feature was the heavy increase in working costs. War conditions accounted for the major portion of the rise in costs, but the development charge also showed an increase of about 1s. per ton milled. The working profit amounted to £366,010. Additional war charges in connection with gold realisation involved £10,212, the nett profit being £355,798, or £115,374 less than that obtained during 1917. The improved yield is accounted for by higher grade ore being stoped from the ore reserve; the effect thereof upon the mill grade, however, was partially offset by a decreased percentage of ore derived from this source. The epidemic of Spanish influenza which occurred during September seriously affected operations during the last quarter of the year. The ore crushed during that period was 21,000 tons below the average of the first three quarters of the year, the profit similarly showing a decrease of £35,500. During the year 15,741 feet of development work was accomplished, of which 9,846 feet were on reef averaging 9·10 dwts. over 38·95 inches. A comparison of the results of payable development for the past two years is as follows:—1917: Payable footage 7,155, percentage payable 53, average width 47·7 inches, average value 13·7 dwts.; 1918: Payable footage 5,065, percentage payable 51, average width 41·0 inches, average value 14·6 dwts. The re-calculation of the payable ore reserve as at the end of the year shows 2,718,000 tons of an average assay value of 8·7 dwts. per ton over an average stoping width of 68 inches. The estimated tonnage is lower by 550,000 tons and the assay value by 0·5 dwts. when compared with the corresponding figures as at the end of the previous year. The decreased tonnage is to a certain extent due to the tonnage developed during the year not being sufficient to replace that stoped, but is mainly due to the elimination of a large tonnage previously included in the payable reserve, but which, as stoping progressed, proved to be of a value below the pay limit. Although the tonnage eliminated no longer figures as ore in reserve, it must not all be considered as definitely discarded. Work is being continued in the more promising portions, and a substantial tonnage of profitable ore is always derived each year from this source. The average yield of the present ore reserve is estimated at from 32s. to 36s. per ton milled, according to the proportion and value of ore to be derived from sources outside the payable reserve. A somewhat higher yield than this will no doubt obtain during the current year, as it is probable that ore of

higher grade than the average will be mined from the reserve owing to the disposition of the working faces. The progress made in shaft sinking in the lease area was disappointing, owing to water difficulties at both shafts. No. 3 shaft was temporarily discontinued during February, and the cementation process adopted to seal off the water. Sinking was resumed in November, and the dolomite was successfully sunk through without encountering water. The total footage sunk for the year was 286 feet, making the total depth of the shaft 482 feet, of which 319 feet were bricked or ringed. The erection of the large winder is proceeding. At No. 4 shaft a distance of 883 feet was sunk, making the total depth at the end of the year 1,013 feet, of which 965 feet were bricked or ringed. Sinking was discontinued for a short period, during which water-bearing fissures were successfully closed off by means of the cementation process.

E. W. Tarry & Co.

The report of E. W. Tarry & Co. for the year ended 31st August last states that the conditions in South Africa have been most seriously affected by the war. The seasons have been good as to weather, and the agricultural industry has been helped accordingly. On account of the shortage of imports, local manufacture has been stimulated. Profit amounts to £43,691; £12,610 was brought forward, less excess profits duty for 1917, £8,947, making £47,355. The directors recommend a final dividend on the ordinary shares of 5 per cent., making 7½ per cent. for the year, to place to reserve £3,000, and to carry forward, subject to provision being made for excess profits duty, not yet ascertained, £24,105.

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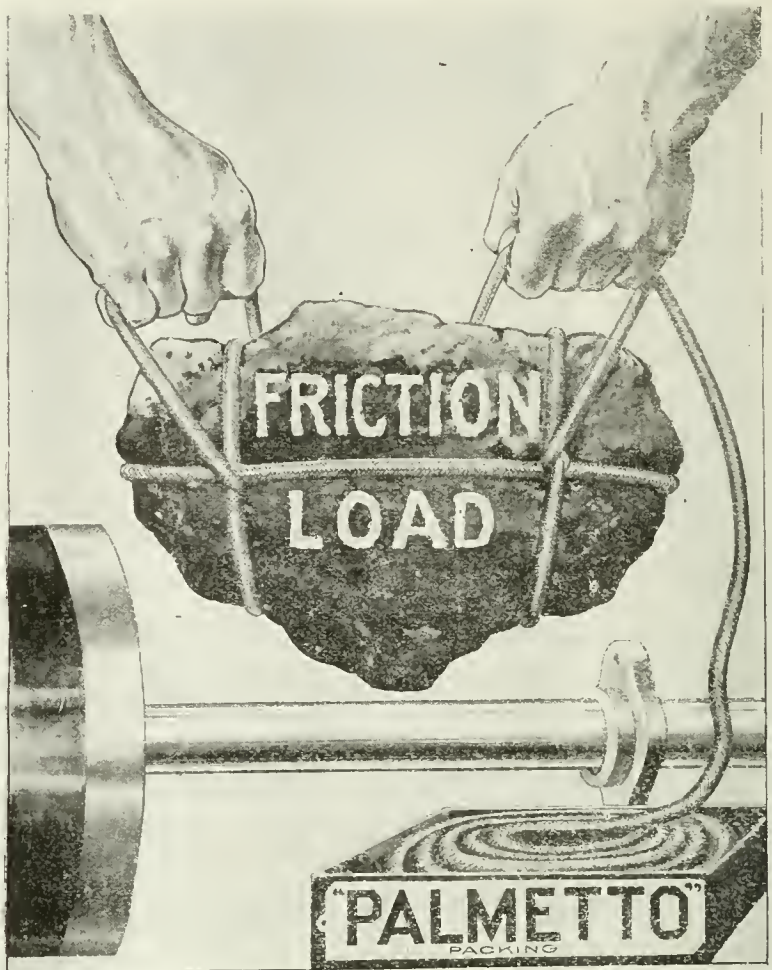
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PROGRESS ON DAGGAFONTEIN.

The consulting engineer's report on the Daggafontein Mines for the year 1918 states: Owing to the workings being inaccessible during the greater portion of the year on account of water, no development work was done. The water difficulties have now been overcome, and development work was resumed early in February. The pumping plant at the 2,000 ft. station at No. 1 shaft was completed early in April. Work was then concentrated on dewatering the lower portion of the shaft and recovering the main station. At the end of the year the bottom pump station was completed, and pumping was started on the 2nd January of the current year. A dam is being built in the 2nd level drive south with a view to applying cementation to seal off the water encountered in this heading. At No. 2 shaft the 500 ft. pump station was completed early in the year. The dolomite water below this level was successfully sealed off by cementation. As the application of the process involved a considerable time, the footage sunk for the year was only 509 feet. The total depth of the shaft at the end of the year was 1,028 feet, of which 1,012 feet were timbered.

The manager's report for the year ended 31st December, 1918, states:—No. 1 shaft: Development: No development work was accomplished during the year owing to the working faces being flooded. Two winding accidents occurred to the Robey hoist, considerably delaying the dewatering of the mine. The first accident took place on the 28th May, when the centre and right-hand bedplates and the cylinder pedestal were broken, and the second on the 20th September, when one side of the engine was completely wrecked and the bedplate on the other side was damaged. This engine has been repaired and a safety device installed, which will effectually prevent accidents of this description in future. Pump chambers and sumps: A pump chamber

and sump have been cut at the 2,000 ft. and 3,600 ft. levels respectively, and have been equipped with one Glenfield & Kennedy pump each and the necessary motors and electrical gear. An 8 in. pump column has been installed in the shaft. Cementation process: A dam is being built in the 2nd level drive south for the purpose of cementing off the water. The fissures in the west haulage way will also be cemented. No. 2 shaft: The pump station at 500 feet was completed and put into commission. The water-bearing dolomite below the station was successfully sunk through by means of the cementation process. This was carried out in two stages, the first being 180 feet and the second 200 feet. The direct charges to the process amounted to £20,525. The time occupied in cementation was nine months, during which shaft sinking was suspended. This accounts for the small footage sunk during the year, viz., 509 feet. Total footage sunk during the year, 509 ft.; total depth at the end of the year, 1,028 ft.; footage timbered during the year, 510 ft.; total footage timbered at the end of the year, 1,012 ft. Water: Water pumped and baled from No. 1 shaft, 250,042,810 gallons; water pumped and baled from No. 2 shaft, 168,957,590 gallons; total, 419,000,430 gallons. During the year a total of 122,539,000 gallons of water was sold to the Rand Water Board. General: The macadamised road from the mine to Largo Station was completed during the year and has considerably facilitated the coal transport. A bath house has been built and fully equipped at the native hospital. A new overhead power line has been constructed between Nos. 1 and 2 shafts. A drill sharpening shop has been erected at No. 2 shaft. The epidemic of Spanish influenza affected the mine comparatively lightly, but I regret to have to report the death of one European and four natives through this cause. In conclusion, I wish to thank the staff and employees for their loyal support through a very difficult period.

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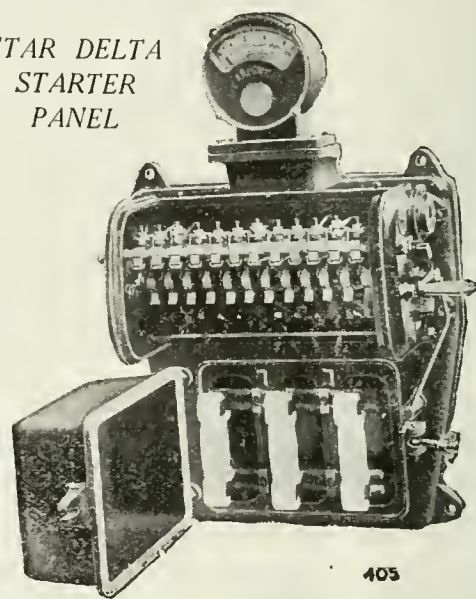
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TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Crushing and Profit & Loss Returns for Six Months—An Interesting Table—Compiled from Chamber of Mines' Statements.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax, Miners' Phtlasis Contributions, etc.

AURORA WEST.

Capital: £106,353 (10s. shares).

1918.		Revenue.		Cost		Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.	
September	13,600	15,653	23 0	22 0	515	0 9	
October	12,700	14,043	21 2	23 4	*932	1 6	
November	11,800	12,624	21 5	24 9	*2,092	3 7	
December	10,700	10,789	20 0	25 6	*2,934	5 6	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	12,000	10,985	18 4	23 8	*3,287	5 6
February	11,700	11,885	20 4	25 5	*2,994	5 1

* Loss.

BANTIES CONSOLIDATED.

Capital: £502,306.

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
September	20,150	25,329	25 2	23 6	1,171	1 2	
October	18,150	23,617	26 0	23 2	2,129	2 4	
November	21,000	25,724	24 6	17 4	6,992	6 8	
December	7,130	12,909	35 2	18 10	5,844	16 5	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	3,050	4,409	28 11	21 14	1,004	6 7
February	—	1,417	—	—	—	—

* Loss.

BRAKPAN MINES.

Capital: £850,000; issued £791,100.

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
September	51,000	87,558	34 3	25 0	24,179	9 6	
October	49,000	81,748	33 3	26 5	17,724	7 3	
November	45,000	80,507	35 9	26 4	21,052	9 4	
December	44,000	85,052	38 7	26 2	26,440	12 0	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	42,000	86,241	41 0	25 11	30,874	11 8
February	41,300	81,850	39 7	25 1	29,176	11 2

CITY DEEP.

Capital: £1,250,000.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
September	52,500	100,280	37 9	25 1	30,416	11 7	
October	49,500	92,159	37 3	28 2	20,566	8 4	
November	46,500	88,731	38 2	30 6	15,893	6 10	
December	45,000	91,127	40 6	29 7	22,728	10 1	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	45,500	91,415	40 2	28 11	24,887	10 11
February	40,000	78,825	39 5	30 5	17,510	8 9

CITY AND SUBURBAN.

Capital: £1,360,000 (£4 shares).

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
September	17,005	27,627	31 9	36 5	*1,009	4 9	
October	19,053	30,974	32 6	32 0	*163	0 2	
November	16,490	33,413	40 2	37 10	1,115	1 9	
December	15,945	31,624	39 8	39 2	*234	0 1	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	15,579	28,765	36 11	39 9	*2,793	3 7
February	13,917	24,437	34 9	40 10	*1,368	6 3

* Loss.

CONSOLIDATED LANGLAAGTE.

Capital: £950,000.

		Revenue.		Cost.		Profit.	
1918	Tons.	£	s. d.	s. d.	£	s. d.	
September	39,000	53,194	27 3	20 8	12,843	6 7	
October	40,000	50,301	25 0	20 3	9,886	4 11	
November	36,600	47,906	26 1	21 4	8,848	4 10	
December	37,400	47,587	24 6	20 9	8,835	4 9	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	41,300	51,644	25 0	20 9	8,859	4 3
February	41,000	49,414	23 11	19 9	8,870	4 4

CONSOLIDATED MAIN REEF.

Capital: £1,217,602.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
September	48,400	71,731	29 8	25 2	9,625	4 6
October	46,310	69,799	29 4	25 11	8,183	3 6
November	41,700	62,985	30 3	28 1	3,026	1 5
December	43,420	65,436	30 2	27 5	4,833	2 3

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	44,310	68,367	30 10	27 7	6,551	2 11
February	41,510	67,199	31 10	28 9	6,417	3 1

CROWN MINES.

Capital: £940,106 (10s. shares).

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
September	156,000	221,865	28 3	23 5	33,091	4 3	
October	147,000	206,788	28 0	23 3	31,483	4 3	
November	134,000	188,620	28 1	25 3	15,537	2 1	
December	132,000	195,379	29 5	25 11	21,596	3 3	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	140,000	205,110	29 4	26 4	18,380	2 7
February	124,000	183,948	29 6	27 5	12,970	2 1

DURBAN ROODEPOORT DEEP.

Capital: £440,000.

		Revenue.		Cost	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
September . . .	24,200	35,719	29 1	28 0	1,007	0 10
October	25,600	38,518	30 1	27 9	2,191	1 9
November . . .	25,300	38,399	30 4	28 2	2,002	1 7
December . . .	26,200	38,969	29 5	26 9	3,065	2 4

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	23,200	34,908	30 1	39 3	*531	0 5
February	25,000	37,563	30 1	28 4	1,834	1 6

* Loss.

EAST RAND PROPRIETARY MINES.

Capital: £2,415,897.

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
September	93,000	112,034	24 1	27 6	*19,694	4 3	
October	113,000	131,769	23 4	21 0	11,080	2 6	
November	112,000	142,630	25 5	22 19	12,054	2 2	
December	115,000	137,792	24 0	21 5	11,802	2 1	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	115,000	146,424	25 3	23 0	12,606	2 2
February	103,500	134,458	26 4	24 0	8,734	1 8

* Loss.

FERREIRA DEEP.

Capital: £980,000.

		Revenue.		Cost		Profit.	
1918.	Tons	£	s. d.	s. d.	£	s. d.	
September	36,400	54,940	30 2	24 2	9,653	5 4	
October	38,700	59,965	31 0	24 2	11,975	6 2	
November	33,950	59,252	34 11	26 9	12,592	7 5	
December	35,500	57,259	32 3	24 11	11,848	6 8	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	37,240	62,021	32 4	24 10	13,639	7 4
February	31,700	49,690	30 8	26 7	6,962	4 5

GEDULD PROPRIETARY.

Capital: £970,000.

		Revenue.		Cost	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
September	13,000	63,682	29 1	20 10	18,646	8 8
October ...	11,500	61,647	29 9	20 11	18,082	8 9
November	11,000	60,794	29 8	20 3	19,152	9 4
December	12,500	62,471	29 5	19 9	20,235	9 6

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	12,900	63,402	29 7	20 0	20,364	9 6
February	39,500	60,046	30 5	19 10	19,156	9 10

GELDENHUIS DEEP.

Capital: £585,753.

		Revenue.		Cost.		Profit.	
1918	Tons	£	s. d.	s. d.	£	s. d.	
September	47,348	55,348	23 1	23 5	1,736	0 9	
October	48,100	57,833	24 1	22 11	1,419	0 7	
November	45,350	54,978	24 3	24 2	*1,002	0 5	
December	47,000	55,679	23 8	23 9	*1,348	0 7	

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	47,100	55,978	23 7	21 0	*49	0 5
February	42,500	50,514	23 5	26 1	*5,189	2 7

* Loss.

GOVERNMENT AREAS (MODDER).

Capital: £1,400,000.

		Revenue.		Cost.	Profit.	
1918	Tons.	£	s. d.	s. d.	£	s. d.
September	117,500	202,952	34 3	19 9	87,070	14 10
October	114,500	200,183	35 0	20 2	84,744	14 10
November	100,000	187,274	36 11	21 6	79,618	15 11
December	93,000	171,838	36 6	21 11	69,600	15 0

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	106,500	188,314	35 4	21 5	74,4	1
February	101,000	179,658	35 7	21 9	69,594	13 5

GLYNN'S LYDENBURG.

Capital: £170,000.

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	£	s. d.	£	s. d.
September	1,201	8,975	12 9	23 0		3,944	5 4
October	2,604	5,331	10 11	32 0		1,035	8 3
November	540	1,096	—	—		*1,500	—
December	1,318	2,279	31 0	14 2		720	11 8

1919.	Tons.	£	s. d.	s. d.	£	s. d.
January	2,784	4,126	29 8	—	—	—
February	3,160	6,168	29 6	—	—	—

JUPITER.										NEW GOCH.															
Capital : £1,014,200.					Revenue.					Capital : £550,000.					Revenue.										
					Cost.										Cost.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d.				1918.	Tons.	£	s. d.	s. d.	£	s. d.									
September	25,200	28,800	22 10	21 3.	1,734	1 5				September	16,650	15,406	18 2	19 1	76	0 1									
October	21,900	26,990	24 8	25 5	*1,391	1 3				October	16,050	14,005	17 3	19 2	*1,375	1 9									
November	20,600	24,841	24 0	25 1	*1,466	1 5				November	15,200	13,147	16 10	19 8	*990	1 4									
December	23,200	28,961	25 0	22 11	1,913	1 8				December	15,150	13,015	17 0	18 2	*501	0 8									
1919.										1919.															
January	26,400	27,908	24 2	21 1	*530	0 3				January	14,200	13,491	17 10	19 3	*98	0 2									
February	22,100	24,310	22 0	23 3	*1,762	1 6				February	12,550	12,684	19 11	21 0	*513	0 10									
* Loss.										* Loss.															
KNIGHT CENTRAL.										NEW HERIOT.															
Capital : £900,000.					Revenue.					Capital : £115,000.					Revenue.										
					Cost.										Cost.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d.				1918.	Tons.	£	s. d.	s. d.	£	s. d.									
September	21,500	33,043	26 5	23 5	3,564	2 11				September	12,300	16,197	26 4	27 4	*978	1 7									
October	23,750	29,921	25 2	23 0	2,011	1 8				October	11,800	16,371	27 9	27 6	*181	0 4									
November	20,500	27,122	26 6	25 2	778	0 9				November	11,200	15,632	27 11	28 2	*480	0 10									
December	17,350	27,355	30 1	29 2	1,180	1 9				December	11,100	16,439	29 6	27 8	791	1 5									
1919.										1919.															
January	17,900	27,377	30 7	29 5	996	1 1				January	11,900	15,967	25 1	26 1	*1,128	1 11									
February	20,000	28,957	26 8	27 8	*429	0 5				February	10,100	14,153	28 0	28 8	*195	1 0									
* Loss.										* Loss.															
KNIGHTS DEEP.										NEW KLEINFONTEIN.															
Capital : £743,526.					Revenue.					Capital : £1,300,000.					Revenue.										
					Cost.										Cost.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td> <td>1918.</td> <td>Tons.</td> <td>£</td> <td>s. d.</td> <th>s. d.</th> <td>£</td> <th>s. d.<td colspan="3"></td></th>				1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td>									
September	83,160	70,449	17 0	16 6	183	0 2				September	55,700	75,567	27 2	25 7	2,512	0 11									
October	75,500	463,187	16 10	18 10	*7,489	2 0				October	52,820	73,193	27 9	27 1	62	—									
November	75,900	65,572	17 3	18 5	*5,512	1 5				November	46,440	62,217	26 9	27 4	*2,633	1 2									
December	78,000	61,324	15 9	17 6	*7,941	2 0				December	47,200	57,569	23 8	25 2	*3,287	1 5									
1919.										1919.															
January	85,300	70,262	16 6	16 7	*464	0 1				January	45,740	57,769	25 3	27 7	*6,115	2 8									
February	77,600	68,312	17 7	17 8	1,014	0 3				February	53,500	64,120	24 0	23 4	712	0 3									
* Loss.										* Loss.															
(c) In addition, £1,869 taken from reserve.										NEW MODDERFONTEIN.															
(d) In addition, £1,448 taken from reserve.										Capital : £1,400,000 (£4 shares).					Revenue.										
Capital : £886,500.					Revenue.										Cost.										
					Cost.										Profit.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td> <td>1918.</td> <td>Tons.</td> <td>£</td> <td>s. d.</td> <th>s. d.</th> <td>£</td> <th>s. d.<td colspan="3"></td></th>				1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td>									
September	49,200	61,027	24 9	18 1	16,411	6 8				September	72,000	170,241	47 3	21 3	90,191	25 1									
October	46,940	59,519	25 3	19 2	14,421	6 2				October	73,000	167,909	46 0	20 3	90,485	24 9									
November	44,260	56,291	25 5	19 4	13,519	6 1				November	73,000	167,650	45 11	20 3	90,318	24 9									
December	44,190	54,783	24 9	18 10	13,113	5 11				December	70,000	159,370	45 6	20 3	85,062	24 4									
1919.										1919.															
January	15,170	55,654	24 3	18 10	13,651	5 9				January	76,000	170,181	44 9	20 3	91,271	24 0									
February	38,160	48,917	25 8	20 1	10,506	5 6				February	78,000	168,843	43 3	19 1	93,173	23 11									
* Loss.										* Loss.															
LUPPAARDSVELD ESTATE.										NEW PRIMROSE.															
Capital : £172,012.					Revenue.					Capital : £325,000.					Revenue.										
					Cost.										Cost.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td> <td>1918.</td> <td>Tons.</td> <td>£</td> <td>s. d.</td> <th>s. d.</th> <td>£</td> <th>s. d.<td colspan="3"></td></th>				1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td>									
September	20,240	21,100	21 2	21 5	*783	0 9				September	18,000	15,861	17 7	16 0	1,461	1 7									
October	19,440	19,336	19 11	22 0	*2,421	2 6				October	17,400	15,899	18 3	16 10	1,271	1 6									
November	18,690	18,962	20 3	21 8	*1,695	1 10				November	17,000	15,355	17 5	16 6	1,306	1 6									
December	19,350	20,122	20 8	21 6	*1,051	1 1				December	17,800	15,993	18 0	16 7	1,208	1 1									
1919.										1919.															
January	19,560	21,391	21 10	22 6	*888	0 11				January	17,300	16,315	18 11	17 7	1,138	1 4									
February	18,860	20,950	22 3	22 2	*230	0 3				February	15,600	15,317	19 0	18 1	1,211	1 7									
* Loss.										* Loss.															
MEYER AND CHARLTON.										NEW UNIFIED.															
Capital : £200,000.					Revenue.					Capital : £250,000.					Revenue.										
					Cost.										Cost.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td> <td>1918.</td> <td>Tons.</td> <td>£</td> <td>s. d.</td> <th>s. d.</th> <td>£</td> <th>s. d.<td colspan="3"></td></th>				1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td>									
September	11,480	38,527	67 1	27 7	22,099	38 6				September	12,400	12,021	18 9	15 5	2,446	3 11									
October	12,111	40,698	67 0	27 1	23,645	38 11				October	12,100	12,221	20 2	16 6	2,245	3 9									
November	13,000	40,298	62 0	24 5	23,832	36 8				November	12,100	11,800	19 6	15 11	2,167	3 7									
December	13,635	39,763	58 0	23 0	23,518	34 6				December	13,100	12,165	18 7	11 10	2,145	3 9									
1919.										1919.															
January	12,750	39,178	61 11	25 8	22,545	35 4				January	13,100	12,293	18 1	15 1	2,189	3 3									
February	11,625	33,986	58 6	24 11	19,015	32 9				February	12,300	11,040	17 11	15 1	1,750	2 10									
* Loss.										* Loss.															
MODDER DEEP.										NOURSE MINES.															
Capital : £700,000.					Revenue.					Capital : £827,821.					Revenue.										
					Cost.										Cost.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td> <td>1918.</td> <td>Tons.</td> <td>£</td> <td>s. d.</td> <th>s. d.</th> <td>£</td> <th>s. d.<td colspan="3"></td></th>				1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td>									
September	57,000	114,935	49 4	19 1	58,431	20 6				September	40,600	51,609	26 11	25 6	1,779	0 11									
October	56,500	116,621	41 3	19 11	57,827	20 6				October	38,350	53,187	27 11	26 6	1,611	0 10									
November	56,200	109,455	38 6	19 8	51,244	18 2				November	31,500	45,791	26 7	27 7	*4,288	2 6									
December	57,000	113,123	49 7	20 6	52,703	18 6				December	31,200	41,852	28 6	30 5	*3,610	2 1									
1919.										1919.															
January	58,001	127,755	41 1	21 7	65,026	22 5				January	35,000	50,098	28 8	27 11	561	0 4									
February	48,000	115,691	48 2	22 11	60,312	25 2				February	32,600	47,256	28 8	28 5	310	0 2									
* Loss.										* Loss.															
MODDER DEEP										RANDFONTEIN CENTRAL.															
Capital : £500,000					Revenue.					Capital : £1,500,000.					Revenue.										
					Cost.										Cost.										
					Profit.										Profit.										
1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td> <td>1918.</td> <td>Tons.</td> <td>£</td> <td>s. d.</td> <th>s. d.</th> <td>£</td> <th>s. d.<td colspan="3"></td></th>				1918.	Tons.	£	s. d.	s. d.	£	s. d. <td colspan="3"></td>									
September	41,300	85,108	41 3	18 0	47,671	23 1				September	158,000	175,270	22 1	19 7	20,505	2 7									
October	42,100	86,960	41 1	17 5	49,997	23 9				October	140,000	159,155	22 7	22 9	93	—									
November	41,000	84,092	41 0	17 8	47,580	23 3				November	133,000	147,358	22 2	22 11	*5,010	0 9									
December	40,900	84,577	41 0	18 0	17,515	23 3				December	118,200	128,363	21 5	23 9	*11,894	2 0									
1919.										1919.															
January	41,400	88,888	40 0	16 11	51,013	23 0				January	143,000	160,900	22 6	21 1	8,293	1 2									
February	39,700	83,128	41 11	10 0	17,148	23 9				February	135,000	153,190	22 5	21 7	7,603	1									
* Loss.										* Loss.															

ROBINSON

Capital £2,750,000 (£5 shares).		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
September	36,400	13,119	23 8	20 4	5,255	2 11
October	36,800	10,128	21 10	20 8	1,329	0 9
November	35,000	12,749	24 5	21 7	4,012	2 4
December	36,100	11,218	21 6	21 6	4,167	2 6
1919.						
January	38,500	15,442	23 7	21 0	4,779	2 6
February	35,800	11,857	23 5	20 11	1,135	2 4

ROBINSON DEEP.

Capital: 681,897 B shares, £1 each, and 500,000 A shares, 1s. each.

	Revenue.			Cost.	Profit.	
1918	Tons.	£	s. d.	s. d.	£	s. d.
September	38,200	51,737	27 4	29 5	*1,744	2 6
October	40,200	52,735	26 3	28 9	*5,967	3 0
November	40,500	54,694	26 11	28 0	*3,139	1 7
December	39,400	51,749	27 9	28 0	*1,450	0 9
1919.						
January	35,200	51,075	29 0	31 8	*5,351	3 0
February	36,000	49,834	27 8	28 1	*1,313	0 9

* Loss.

ROODEPOORT UNITED.

Capital: £460,000.

	Revenue.			Cost.	Loss	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
September	22,000	21,472	18 10	23 3	1,130	3 9
October	21,900	19,421	17 5	24 4	7,241	6 7
November	24,000	22,275	18 6	22 2	3,867	3 3
December	24,000	22,589	17 11	21 1	2,460	2 1
1919.						
January	24,000	23,736	19 4	20 8	966	9 10
February	23,300	22,797	19 1	20 7	1,049	0 11

* Loss.

ROSE DEEP

Capital: £700,000.

	Revenue.			Cost.		Profit	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
September	48,600	54,205	22 4	18 7	7,993	3 3	
October ...	49,300	55,072	22 4	19 8	5,374	2 3	
November	46,400	53,823	23 2	19 10	6,779	2 1	
December	44,300	51,487	23 3	20 2	5,663	2 7	
1919.							
January	48,000	54,940	22 10	19 6	7,846	3 3	
February	47,500	55,751	23 6	19 7	8,519	3 7	

SIMMER AND JACK.

Capital: £3,000,000.

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
September	55,500	64,771	23 1	18 6	10,559	3 10	
October ..	49,900	56,299	22 7	20 9	3,542	1 5	
November ..	48,900	55,985	22 11	20 8	4,497	1 10	
December ..	45,700	49,554	21 7	20 6	5,803	2 6	
1919.							
January ..	44,100	49,057	22 3	21 2	2,504	1 2	
February ..	37,100	42,643	23 0	22 6	2,365	1 3	

(c) Of this, £2,761 carried to reserve.
(d) In addition, £4,035 taken from reserve.
(e) In addition, £2,124 taken from reserve.

SIMMER DEEP.

Capital: £1,650,000.

		Revenue.		Cost.	Proft.	
	Tons	£	s. d.	s. d.	£	s. d.
1918.						
September	12,100	12,341	20 10	21 3	*2,719	1
October	41,500	46,334	20 10	21 9	*2,869	1
November	42,400	40,460	19 0	22 9	*8,529	4
December	43,100	48,420	22 6	21 8	911	0
1919.						
January	43,300	48,135	22 3	22 5	*947	0
February	37,900	42,622	22 6	23 10	3,109	1

* Loss.

SUB NIGEL.

Capital: £775,000.

		Revenue.		Cost.	Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.
1918.						
September	9,600	a28,889	60 2	37 4	9,369	19 6
October	9,950	24,191	48 8	32 7	7,517	15 1
November	9,100	26,349	57 11	38 2	8,166	18 7
December	9,700	25,746	53 1	36 6	7,569	15 7
1919.						
January	9,100	26,149	57 6	41 2	7,105	15 7
February	8,500	24,399	56 6	37 10	7,956	18 9

(a) Of this, £1,020 carried to reserve

SPRINGS MINES.

Capital: Authorised, £1,500,000; registered, £1,300,000; issued, £1,153,500.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
September ..	39,100	86,683	44 4	23 3	40,323	20 8
October	35,450	73,383	41 5	23 11	31,748	17 11
November ..	32,000	72,343	44 6	24 6	32,446	20 3
December ..	28,800	68,108	47 4	25 9	30,200	21 0
1919.						
January ..	33,350	73,320	44 0	25 3	30,287	18 2
February ..	35,300	68,775	39 0	24 3	25,271	14 4

TRANSVAAL GOLD ESTATES

Capital: £604,225.

	Revenue.			Cost	Profit		
1918.	Tons	£	s. d.	s. d.	£	s. d.	
September	15,340	26,124	34 1	23 4	8,131	10 3	
October	13,630	25,482	31 10	25 8	8,107	12 4	
November	475	3,075			*5,212		
December	3,550	4,915	27 8	04 4	*6,508	36 8	
1919.							
January	11,380	11,455	25	29 9	*2,780	4 11	
February	12,850	18,771	29 7	20 9	1,167	1 10	
		8 10ss.					

VAN RYN

Capital: £500,000.

	Revenue.		Cost.		Profit.	
	Tons.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.
1918.						
September	33,400	34,258	24 9	17 4	7,046	4 3
October	33,800	36,153	24 4	17 7	6,147	3 8
November	32,000	33,816	20 11	17 7	5,514	3 6
December	32,300	32,550	19 10	17 6	4,063	2 6
1919.						
January	32,600	32,011	19 6	16 11	1,133	2 6
February	31,100	31,596	20 4	17 6	1,110	2 8

VAN RYN DEEP.

Capital: £1,196,892

	Revenue.				Cost	Profit	
	Tons.	£	s.	d.	£	s.	d.
1918.							
September	43,400	97,940	12	6	24	4	49,391
October	47,750	98,505	11	3	20	7	49,364
November	42,350	94,932	14	10	21	6	49,469
December	40,800	94,589	16	3	23	2	47,115
1919.							
January	42,000	95,748	14	8	22	8	47,479
February	43,350	94,992	11	5	21	11	47,536

VILLAGE DEEP

Capital: £1,000,671

		Revenue.		Cost		Profit.	
	Tons.	£	s. d.	s. d.		£	s. d.
1918.							
September	41,200	66,350	39 0	26 11		5,643	2 7
October	40,900	58,037	28 5	28 1		*671	0 4
November	38,200	53,050	27 9	30 11		*7,164	3 9
December	46,800	65,139	27 7	24 2		6,919	2 11
1919.							
January	48,200	65,886	27 4	25 5		4,262	1 9
February	45,800	59,629	26 9	24 7		2,580	1 2

* Loss.

VILLAGE MAIN REEF.

Capital: £472,000.

		Revenue.		Cost.	Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.
1918.						
September	20,800	31,573	30 1	22 11	7,054	6 9
October	21,300	28,804	27 1	21 9	4,995	4 8
November	49,800	26,548	26 10	22 2	4,029	4 1
December	17,600	25,877	29 4	25 10	2,598	2 10
1919.						
January	18,200	25,729	28 2	25 11	2,004	2 9
February	17,600	21,795	25 8	23 11	1,188	1 5

WEST RAND CONSOLIDATED.

Capital: £2,004,424.

		Revenue.		Cost.	Profit.	
	Tons.	£	s. d.	s. d.	£	s. d.
1918.						
September	29,080	31,746	23 9	23 2	795	0
October	27,150	31,225	22 9	24 7	*2,252	1
November	25,000	26,994	21 6	25 9	*5,162	4
December	28,400	32,117	22 6	23 6	*1,395	1
1919.						
January	30,500	36,279	23 8	22 11	1,170	0
February	28,600	33,362	23 2	23 1	111	0

WITWATERSRAND.

Capital: £475,000; issued, £199,625.

		Revenue.		Cost.	Profit	
	Tons.	£	s. d.	s. d.	£	s. d.
1918.						
September . . .	35,000	40,652	22 11	19 9	5,521	3
October	31,000	37,715	22 2	20 0	3,711	2
November	31,005	35,851	22 9	20 10	3,492	2
December	33,321	37,851	22 6	20 3	4,086	2
1919.						
January	35,500	38,157	21 2	19 10	2,881	1
February	30,750	34,942	22 9	21 1	2,496	1

WITWATERSRAND DEEP.

Capital: £550,000.

	Revenue.			Cost	Profit		
	Tons.	£	s. d.	s. d.	£	s. d.	
1918.							
September	29,000	36,420	25 1	24 4		352	0
October	28,730	35,107	24 5	25 9	*2,593		1 11
November	28,120	31,454	22 2	26 4	*6,237		4 1
December	26,400	32,614	24 4	26 2	*2,577		1 11
1919.							
January	27,580	35,800	26 0	27 7	*1,958		1 11
February	27,300	32,928	24 1	26 1	*3,102		0 1

* Loss.

WOLHUTER

Capital: £860,000

		Revenue.		Cost.		Profit.	
	Tons.	£	s. d.		£	s. d.	
1918.							
September	32,150	38,752	24 1	20 10	18,611	10 3	20,141
October	31,550	35,830	22 9	20 10	18,170	10 4	17,660
November	29,270	35,121	24 0	20 7	18,110	10 4	17,011
December	27,500	37,308	27 4	22 11	15,278	10 6	22,030
1919.							
January	29,250	35,792	24 5	21 5	18,370	10 6	17,422
February	26,600	33,627	24 11	21 5	17,370	10 6	16,257

THE WEEK IN THE SHAREMARKET.

Generally Dull—Final Slight Improvement—Crown Diamonds in Demand.

AFTER a dull closing the market showed very little change on Saturday morning, except for a decrease in Springs Mines and Government Areas. The latter, however, hardened somewhat after the call. There was again no change in the leading stocks on Monday morning. Modder Easts were heavily sold at 19s. Crown Diamonds were in good demand and made 17s. Wit. Deeps were also an active feature with commencing sales at 16s., finishing at 16s. 6d. After the call they advanced still further up to 17s. 6d. Crown Diamonds improved to 17s. 3d. Knight Centrals were also bought up to 7s. 6d. The opening business on Tuesday was confined to dealings in Knight Centrals from 7s. 9d. to 8s. 3d., closing at 8s., and Crown Diamonds from 17s. 6d. to 17s. 9d. The call was put through at about yesterday's rates with the exception of an improved bid of 66s. for Brakpans, which was subsequently increased to 66s. 6d. On Wednesday Crown Diamonds were in demand again and made 19s. At the call the better class stocks with few exceptions had a lower tendency. The two stocks which of late showed a good deal of activity, viz., Knight Centrals and Wit. Deeps, had each a considerable setback. *Per contra* people took a fancy to Bantjes, Roberts Victors, Bush Tins. Daggafonteins came in for considerable support, helping out the options which are on the point of expiry. Leeuwpoorts were quite to the good and this helped African Farms to a minor degree. Modder East and the options were again on the down grade on Thursday morning. Crown Diamonds were again firm, but the main advance was in Makganyenes with sales at from 56s. to 58s. 6d. Prices were better at the call with few exceptions. Hume Pipes made a substantial advance of 4s., with sales at 35s. New Modders were also considerable gainers, but Modder East remained stationary. All the best class stocks were the turn harder. The options on Daggafonteins expire this day. The dealings in outside stocks for the week consisted of:—Sales: Makganyenes, 46s. to 58s. 6d.; Koodoos, 20s.; Vendors, 17s. 6d.; Compounds, 1s. to 2s. 4d.; Sakalavas, 1s. 6d. to 5s.; New Farms, 1s. 6d.; Phoenix, 1s. and 1s. 1d.; Monteles, 13s. 6d. to 12s. Buyers of Henderson's Estates, 5s.; options, 1s.

The opening on Friday showed an absolute neglect of gold stocks. The entire business being confined to Crown Diamonds with sales at 21s., 21s. 6d., and 21s. 9d.; Sakalavas fluctuating from 13s. 6d. to 15s., finishing at 14s. sales and buyers; Makganyene Diamonds from 66s. to 72s. 6d., closing 67s. 6d. buyers. The call brought a general marking down in prices as the following alterations will show:—Sales: Main Reefs, 10s. 4½d.; Crown Diamonds, 22s.; East Rands, 5s. 10d.; Geduld Props, 44s. 3d.; Government Areas, 91s. 6d.; Hume Pipes, 34s.; Leeuwpoorts 25s.; Modder Easts, 18s. 7½d.; Randfonteins, 15s.; Roberts Victors, 17s. 6d.; Rooibergs, 7s. 3d.; Springs, 56s.; Van Dyks, 3s.; West Springs, 22s. 7½d.; Wit. Deeps, 15s. 3d. Buyers and sellers: Knight Centrals, 7s. 1d., 7s. 4d.; Portland Cements, 65s., 66s.; Rand Selections, 77s. 6d., 81s.; Zaaiplaats, 12s. 3d., 12s. 9d.

	Fri., 21st.	Sat., 22nd.	Mon., 24th.	Tues., 25th.	Wed., 26th.	Thurs., 27th.
African Farms	14 6*	14 6*	14 6*	14 3*	14 6*	14 6
Anglo-Amer. Corp.	24 0*	—	—	25 0	—	24 0*
Apex Mines	6 9*	7 3*	7 3*	7 3*	7 3	7 6*
Bantjes Cons.	2 0*	1 11*	1 11*	2 0*	2 6	2 1*
Brakpan Mines	63 0*	62 6*	63 3*	65 6*	67 0*	67 0
Breyton Collieries	—	11 6*	11 6*	—	11 6*	—
Brick and Potteries	—	4 6*	4 0*	4 6*	—	—
City Deeps	51 6	51 0	51 0*	51 3*	51 6*	52 0*
Clydesdale Coll.	22 6*	22 6*	22 6*	—	22 6*	22 0*
Con. Investments	—	—	24 0*	—	—	—
Con. Langbaagtes	17 0*	17 0*	17 3*	17 3*	17 6*	17 9*
Con. Main Reefs	10 8*	10 6*	10 6*	11 0*	—	10 9
Con. Mines Selections	24 9*	—	24 9*	25 0*	25 0*	—
Coronation Freehold's	1 1*	1 1*	1 1*	1 1	—	—
Crown Diamonds	16 7½	16 6	17 0	17 10*	19 0	19 10½
Coronation Syndicates	—	—	—	1 6*	—	—
Daggafontein Mines	22 6*	22 3	22 3	22 6	23 3	23 0
Do. Options	2 3*	2 3a	2 0	2 0	2 9	2 6
Durban Road, Dps.	8 0	8 0	8 0	—	—	—

	Fri., 21st.	Sat., 22nd.	Mon., 24th.	Tues., 25th.	Wed., 26th.	Thurs., 27th.
East Rand Coals	2 2	2 2	2 1	2 1	2 1*	2 1*
East Rand Deeps	0 10	0 9*	0 9*	0 9*	0 9*	0 9*
East Rand Minings	17 0	—	18 0†	18 0†	18 0†	17 4*
East Rand Props.	5 9	6 0	6 3*	6 6	6 8	6 3*
Eastern Golds	1 5	1 5*	1 3*	1 3*	1 3*	1 3*
Frank Smith Dmds.	3 9	3 9*	3 10*	3 11*	3 10*	3 9*
Geduld Props.	45 6	45 6	45 6	45 3*	45 3	44 5*
Glencoe Collieries	6 0*	—	6 0*	—	6 0*	—
Glynn's Lydenburgs	21 6*	21 6*	21 6*	21 6*	21 6*	—
Government Areas	92 3	91 0	91 6*	92 0*	91 9*	92 0
Jhb. Bd. of Exe'tors	30 0*	—	30 0*	30 0*	30 0*	30 0*
Jupiters	4 3	4 0	—	4 0*	—	4 0*
Klerksdorp Props.	1 1	1 1*	1 0*	1 0*	1 1*	—
Knight Centrals	6 1	6 0	6 1	8 1	7 3	7 5
Lace Props.	21 0*	21 0*	—	21 0*	21 0*	20 9*
Leeuwpoort Tins	23 9	23 3*	23 9*	—	25 0	25 3
Lydenburg Farms	8 6	8 6*	8 6*	8 6	8 0	8 6
Meyer & Charltons	—	83 6*	—	—	—	—
Middelville Estates	1 0	1 0*	1 0*	1 0*	1 0*	1 0*
Modder B's	160 0*	162 0†	159 0*	160 0	160 0	157 0*
Modder Deeps	145 0*	145 0*	146 0*	147 0*	145 0*	147 0
Modder Easts	19 3	19 1½	19 0	19 0	18 6*	18 9
Do. Opts. (3 yrs.)	3 8*	3 6*	3 0*	3 6a	3 3*	3 3*
Do. Opts. (4 yrs.)	5 0†	5 0†	5 0	5 0	4 6*	4 3*
Hume Pipes	29 6*	30 0*	30 0*	30 6	31 0	35 0
Natal Navig. Colls.	21 0*	22 0*	21 6*	21 6*	—	—
National Banks	300 0†	300 0†	300 0†	295 0*	300 0†	300 0†
New Boksburgs	1 0*	—	1 0*	1 0*	1 0*	1 0*
New Eland Dmds.	24 0*	26 6	—	25 0*	25 0*	—
New Era Cons.	9 9*	9 10	9 9*	9 9*	10 0	9 9*
New Geduld Deeps	6 0*	6 2	6 2	6 0*	6 2	6 1
New Heriots	10 0*	10 0*	10 0*	—	—	10 6
New Kleinfonteins	12 3	12 3*	12 3*	12 6	12 0	12 0*
New Modders	£26*	£26½†	£25¾*	£25 18 9*	£25 18 9*	£26½
New Uniteds	—	—	5 6†	—	—	—
Nigels	—	5 9*	5 6*	—	—	5 9*
Nourse Mines	14 0	14 0*	14 0	14 0†	14 0†	14 0
Premier Prefs.	155 0*	155 0*	—	—	—	—
Pretoria Cements	68 0	65 0a	66 6*	65 6*	65 0*	65 6*
Princess Estates	3 1*	3 0*	3 0*	3 1*	3 1†	3 1*
Rand Nucleus	1 6*	1 9	1 9*	1 9*	—	—
Rand Selection Corp.	80 0*	80 0*	80 6*	82 6†	—	79 0*
Randfontein Deeps	4 3	4 3*	4 0*	4 0*	4 3*	4 3*
Randfontein Est.	14 3*	14 3*	14 6*	14 6*	14 6	14 7
Roberts Victors	10 0b	10 0*	11 0*	12 6	13 6	15 0
Rooibergs	5 0*	6 0	6 2*	6 6	7 3	7 0*
Rooipoort Uniteds	—	—	—	3 0*	—	—
Ryan Nigels	3 3*	3 3*	3 3*	—	3 3*	3 6*
Shebas	1 3*	1 3*	1 3*	1 3*	1 3*	1 3*
Simmer and Jacks	—	5 6†	—	—	—	—
Simmer Deeps	1 6*	—	1 6	1 6*	1 6*	1 6*
S.A. Lands	6 6*	6 6	6 7	6 7*	6 6*	6 8†
Springs Mines	57 3*	57 0	56 9	56 0	—	56 6*
Sub-Nigels	22 3	22 3	22 0*	22 0*	21 9*	21 9
Swaziland Tins	—	—	20 0†	20 0†	15 0*	16 0*
Transvaal Lands	21 0*	21 0*	21 6*	21 0*	22 0*	22 0*
Trans. G.M. Est.	15 6†	15 6†	15 6†	15 6†	15 0†	15 0†
Van Ryn Deeps	67 6	67 6	67 6	67 3	67 0*	67 6*
Village Deeps	17 0	16 6*	17 0	—	—	16 3*
Village Main Reefs	10 0*	10 0*	10 0	—	10 0†	—
Welgedachts	26 0†	26 0†	26 0†	—	24 0†	—
West Rand Cons.	—	3 0*	3 0*	—	—	—
Western Rand Est.	—	1 6*	—	1 3*	—	1 3*
Witbank Collieries	—	—	—	55 0*	—	—
Witwatersrands	16 6*	16 6*	17 0*	17 6*	17 3*	17 6*
Wit. Deeps	14 0	14 9	16 6	17 6	15 6*	15 6
Wolhuters	—	—	—	—	2 10*	2 10*
Zaaiplaats Tins	12 0*	12 4*	12 3*	12 6*	12 7½	12 6*
New States	23 0	22 10½	22 6*	22 9*	22 7*	22 9
South Van Ryns	8 9*	9 0*	9 0*	9 0*	9 0*	9 0*
S.A. Alkali	32 0*	30 0*	—	31 0	27 0*	31 0*
Tweefontein Colls.	25 0	23 0*	23 0*	23 0*	22 6*	22 9*
West Springs	23 0	22 3*	22 6	22 6	22 6*	22 9*
Do. Options	8 3*	8 3*	8 3	8 3*	8 3*	8 3*
De Beers Pref.	—	—	£14½*	£14*	—	—
New Jagers	—	—	100 0†	90 0*	—	100 0*
Union 5 per cent.	21st. £102 10s.*	22nd. £103 2s. 6d.	24th. £103 2s. 6d.	25th. £103 2s. 6d.	—	—

*Buyers †Sellers ‡Odd lots §Ex London

Orders have been made by the Board of Trade requiring the undermentioned business to be wound up:—Transvaal United Trust and Finance Company, Salisbury House, London Wall, E.C., and company. Controller: B. D. Holroyd, 6 Great Winchester Street, Old Broad Street, E.C.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

THE STRIKE TROUBLES.

Between Friday night, when our hopes were buoyant as to the settlement of the builders' strike, and Saturday morning when these hopes were dashed to the ground through the adverse ballot of thirty-eight majority against peace, there was a wave of despondency throughout business circles. Without going into the merits of the case over much, the feeling was that our friends the workmen had not quite played the game after their representatives on Friday night had agreed (subject to the ballot) to the 41 hours week and 3s. 3½d. per hour.

CHAMBER OF MINES.

The Chamber of Mines can well be congratulated upon the re-election of Sir Evelyn Wallers for another term, and in all honesty he must be thanked for accepting such an unenviable task to-day with such an atmosphere of troubles and unrest. The chairman's address recognises the good conduct of reputable firms in the mining section of the commercial community, and this pat on the back is well deserved. Mr. Nethersole, the chief of the Buying Department, is specially mentioned because he did Trojan work in combating all the intrigues, particularly in dealing with the second-hand speculators, who were a host in themselves.

NATIVE LABOUR AND LIMITED EARNINGS.

The Chamber of Mines may well be congratulated on bringing the subject of native labour forward in the annual report, as it serves no purpose to keep the matter in the background. The boycott of certain Reef stores is referred to, culminating in several native strikes, thus showing that the natives, after being amongst us for thirty years on this Reef, have also learnt a thing or two. The point is that when a native goes on strike, there must be something drastically wrong that must be put right sooner or later. In this respect the Government Cost of Living Commission says that a customer in Pritchard Street gets £10 more in goods for every £100 spent than the native labourer does from the Reef storekeeper. The official tables also show that the rates of profit made in connection with Reef stores are practically double those made by Johannesburg retail drapers, and it was also pointed out that if these native requirements were supplied upon terms similar to those upon which co-operative societies supply their white customers, an addition of 20 per cent. to the landed cost of goods should be ample to cover expenses. Under such improved conditions therefore the native would obtain £80 worth of goods for his £100 as against the £51 worth he now receives.

MICA INDUSTRY.

A visit was made to the Johannesburg mica factory in Chorlton Chambers. The various processes through which mica passes from the rough to the finished article, including the splitting of the mica into sheets, were absorbingly interesting. This local industry, from our own raw material, although in its infancy, is already producing mica tubes and accessories for electrical purposes, Miller 1, 2, 3, and hurricane lamps of all sizes. Among the orders recently executed have been one for mining globes from the Benoni Municipality, another from the S.A. Police, and one for mica boards from the South African Railways. A large order is on hand for micanite for armature winding and tubes, also micanite cloth for tubes. There are many articles manufactured from mica; perhaps one of the outstanding features is coloured electric lamp shades. In the initial stages naturally many difficulties were encountered, but these seem pretty well surmounted, so much so that it is the intention of the manufacturer to exhibit a full range of articles made in Johannesburg at the approaching Agricultural Show, and visitors there will no doubt be very interested in a new home-

industry which, to every appearance, has come to stay. There is one little grievance to this promising enterprise, and that is that imported mica comes in under mining materials at a duty of only three per cent. In this connection, in a letter from the Customs Department, it stated that all matters relative to duties should be referred to the Secretary of the Chamber of Commerce in Johannesburg as the first preliminary step.

OILS AND COLOURS

The speculative element is still very much in evidence, therefore it is difficult to quote actual prices. White lead, according to quality, is being sold from 10d. lb. upwards, the ordinary price over the counter being 1s. lb. Linseed oil is 11s. 6d. to 12s. 6d. per imperial gallon, but for quantities it is a matter for negotiation, as there are heavy stocks at the coast. Turps are 72s. 6d. for 2-4's and 77s. 6d. for 10-1's. Lubricating oils are scarce, the quotations being from 38s. 6d. to 45s. Turpentine and rosen are expected to be scarcer because of the indifferent crops in America. Business was very quiet during the past fortnight owing to the strike, so much so that one of the chief distributing houses has let five of their establishment staff on holiday, as they expect to be very busy afterwards. There is nothing short of anything in the oil and colour line; in fact as a general statement there is sufficient to last twelve or eighteen months.

TIMBER AND IRON

If anything the price is rather firmer for deals, which is the barometer of the market. They are 1s. 7½d. to 1s. 8½d., according to length; flooring, 9½d.; ceilings, 6d. to 6½d.; scantling, 1s. 7½d.; beavers, 5½d. to 6d.; pitch pine and oregon, 9s. 6d. The latest cable news from the Baltic market is that values have advanced £7 per standard against a reduction of £5 in freight, thus making £2 to the bad landed in South Africa. It is estimated that three million standards will be required during the next twelve months, as compared with a normal output of two million standards, therefore if that estimate is anywhere near correct it means a shortage of one million standards. The importers to-day are losing about 1½d. per foot on deals on account of the heavy stocks and poor demand. There is practically no demand from Johannesburg and the Reef on account of the strike and now all cut stuff is scarcer through the saw mills being stopped, therefore the country trade has fallen away somewhat. Representations were made to the Strike Committee to allow a certain saw mill job to be finished for the country but no relief was vouchsafed. The

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price of galvanised 24-gauge roofing iron is 6d. for 6 feet and 7d. for 7 to 10 feet. The best second-hand iron and deals are 1s. 2d. per foot. Dealers report fair business from the country, but much has to be held over, because on account of the strike it is impossible to cut timber of any kind.

SECOND-HAND MATERIAL AND MACHINERY.

As a general statement second-hand material and machinery are not so plentiful simply because the stocks have been sorted and re-sorted for several years, therefore the best has been absorbed. It is said that the mines have used up everything from their dumps whenever it was possible to repair and mend the derelict parts or machinery.

ELECTRICAL GOODS.

There is no alteration to report since last week. Tubing is still very scarce, but immediately the considerable quantities now on the way arrive there is bound to be a big drop in the price of this commodity. It has been ascertained that three firms here alone have upwards of 100,000 feet of tubing on the water—a quantity in itself sufficient to keep Johannesburg easily going for some six months. C.O.D. country orders are very fair, without which outside business affairs in this line would be stagnant owing to the upset created by the strike. Perhaps the severest shortage

is in engineering tools, both hand and the small power kind. Such things as pipe couplings in some sizes cannot be had either in new or second-hand, also lathes and foundry implements. Two new lathes were delivered on the New York wharf on May 16th, 1918, and have only just come to hand. This abnormal delay has cost £55 for the extra interest and wharf charges, to say nothing of cables and other extraneous items. Another dealer had a very good month in February for second-hand parts, the smaller machines and tools required for everyday use. The orders coming from various places, more particularly the Transvaal and Natal coalfields. The milling industry also gave many orders and there was a fair demand for high pressure boilers, whereas low pressure boilers are at a discount and unless very decent have to be scrapped and sent to the iron works.

NATAL PIG IRON PROSPECTS.

Mr. J. N. Eaton, who has just returned from Natal, states that he is making fair progress with his new blast furnace at Newcastle. Its size is 65 ft. by 14 ft., but he does not expect to produce any quantity of good pig iron much before the end of the year, as it is reckoned that a big blast furnace must be in constant heating use for about six months before it is ripe for its best work. The price of Vereeniging mild steel is 42s. 6d. and Dunsbart iron 37s. 6d. per 100 lbs. Imported round bar iron, $\frac{1}{2}$ in., 55s.; $\frac{3}{4}$ in., 52s. 6d.; $\frac{1}{2}$ in., 50s.; flats, 45s. to 65s. per 100 lbs., according to size. Brass and copper sheets, 3s. 6d. lb., and rods 3s. 3d. to 4s. lb. Mild steel cam shafting, 1s. lb. Wire nails, 6 in., 45s.; 5 in., 45s.; 4 in., 50s.; 3 in., 60s.; 2 in. to $2\frac{1}{2}$ in., 65s., all at per 100 lbs.

MINING INSTITUTE.

Government Certificates for Mine Managers and Overseers.

Nearly 80% of the Managers, Certificates issued by examination in South Africa last year were secured by the Institute.

—Vide list in G.M.E.'s recent Annual Report.

Practically all the Overseers passed. Several hundred successes.

Classes may be joined at any time.

Address: Professor JOHN YATES, St. James' Mansions, Eloff St.

Transvaal Gold Mining Estates, LIMITED.

(Incorporated in the Transvaal.)

Five Per Cent. First Mortgage Debentures.

NOTICE IS HEREBY GIVEN that the Interest due on the 1st April, 1919, will be paid against presentation of Coupon No. 18, at the places and within the times following:—

In Johannesburg—

At the Head Office (Transfer Department) of the Company, 4th Floor, The Corner House.

In London—

At the London Office of the Company, No. 1, London Wall Buildings, E.C. (2).

Coupons must be left Four Clear Days for examination, and may be presented at the Head Transfer Office, Johannesburg, any day (Saturday excepted) between the hours of 10 a.m. and 1 p.m. and 2 p.m. and 3 p.m.

Coupons lodged must be accompanied by the listing forms which are provided, and may be obtained on application at the Head Transfer Office of the Company.

Coupons presented at the Head Office, Johannesburg, will be subject to deduction of Union Income Tax.

By Order.

TRANSVAAL CONSOLIDATED LAND AND EXPLORATION CO., LTD.,
Secretaries.

Per C. L. READ.

Head Office:

The Corner House,

Johannesburg. 21st March, 1919

MINING MEN AND MATTERS.

At the recent examination for mine managers Professor Yates' students secured no fewer than eight passes, including one conditional pass, and his candidates for overseas certificates have experienced only one failure.

* * * *

A complimentary luncheon was given on Thursday by the Chamber of Mines to welcome its incoming President, and farewell its outgoing President, who, of course, happen to be one and the same in the person of Sir Evelyn Wallers.

* * * *

Mr. Arthur Chamberlain, of Birmingham, who represents Messrs. Kynoch's and the new explosives industries combine, is on a visit to the Rand.

* * * *

Mr. K. B. Quinan, general manager of De Beers Explosives Factory at Somerset West, has returned after doing yeoman service to the Allied cause during the war, by organising and controlling the explosives section of the Munitions Ministry.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Investor" (Vryheid).—(1) Better hold now. (2) All three are among the best of the Far East shares.

"Shareholder" (Yeoville).—The practice complained of is, unfortunately, only too common. Will print your letter next week.

"Sub."—The report will be out next week, and will answer both your questions.

"K. P."—(1) Yes. (2) 10 per cent. (3) Four years, approximately.

Box 3807.

Tel. 5892.

WRIGHT'S ROPES

H. ALERS HANKEY

Sole Agent.

THE

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AND

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Notes and News

A Curtailed Issue.

Owing to the Power Station strike this week readers will understand why this issue of the *Journal* has been curtailed to its present size. The temporary stoppage of the power supply naturally entailed a congestion of work at the printers, and at the time of going to press the outlook for the immediate future remains uncertain. For the same reason it has been decided to bring out this issue a day earlier than usual, and to hold over several special articles.

Makganyene Diamonds.

A telegram has been received from the mine stating that the water difficulties are being overcome and that the position is improving.

South-West Diamonds.

We learn that Mr. J. W. Craig, the manager of this company, will proceed with the preliminary testing of the property off the coast of South-West Africa within the next few days.

New Eland Diamonds.

On this property the shaft, which is located 600 feet outside the mine area, and which will open up the company's underground workings, has now reached a depth of 100 feet. Washing is proceeding steadily. Owing to the outbreak of influenza early in October last no washing was done from that date until the beginning of February, 1919.

Spaarwater: Sinking to Commence.

The decision of Messrs. Barnato Bros. to proceed with shaft sinking on Spaarwater forthwith marks an important feature in the history of the Farther East Rand. The announcement has emanated from London and we have been unable to obtain information locally as to the location of this shaft, its size and probable depth. The announcement is, however, a most important one, and taken in conjunction with the announcement that important interests are moving in the Heidelberg area, points to extensive developments in the latter district in the near future.

Roberts Victor Diamonds.

We understand that it is proposed to treat the tailings of the Roberts Victor mine. Some of the machinery which is on the edge of the mine is being removed with this object in view, but it will probably be some little time before these arrangements are completed. The situation at the Roberts Victor has of course been changed for the better (as it has been changed at all diamond properties) by the great improvement in the price of diamonds. Stones which were fetching 18s. per carat two or three years ago when the Roberts Victor ceased operations would now sell for nearer 35s. The Roberts Victor Company were obtaining returns as high as 53 carats per 100 loads from the 613 feet level when the mine was closed down, and the property is now considered in a much more favourable light than it was a year or two ago.

The Central Mining Corporation and Heidelberg.

A Reuter cable received during the week announced that the Central Mining and Investment Corporation had concluded a working agreement with Dr. Hans Sauer for the exploitation of properties in the Heidelberg district. This cable evidently refers to the Houtpoort, Eendracht and Heidelberg town lands properties, which are referred to at some length in this issue. On enquiry we are informed by the local directors of the Central Mining and Investment Corporation that they are unaware of the conclusion of any such agreement as is referred to in the cable.

The New Miners' Phthisis Bill.

In the Assembly last week, the Rev. Mr. Van der Horst (Wolmaransstad) asked when the report of the Miners' Phthisis Commission would be published. He understood that drafts of the new Miners' Phthisis Bill had been sent by the Minister to a number of privileged persons, and he felt aggrieved that members of the Phthisis Commission had not been consulted, and had not received any draft copies. Mr. Malan replied that the Dutch copy of the Bill would soon be ready, while the English copy was already complete. It was the custom when Bills were being prepared to take the opinion of interested parties; but, of course, the opinion of such parties need not be accepted. Members of the Commission who were members of Parliament would soon see the copy of the Bill.

* * * *

A Correction.

We much regret that an error crept into our last issue. On page 115 it was stated that the capital of the Southern Van Ryn Reefs was £320,000 with power to increase to £61,500. This last figure should, of course, have read £615,000.

* * * *

Koodoo Diamonds.

The test washings of ground at this syndicate's property have been delayed on account of shortage of native labour, but it is hoped that a washing of not less than 200 loads of ground will be undertaken in a fortnight's time. The syndicate is now engaged in sinking two shafts 37 feet apart and driving is proceeding from these shafts with a view to testing the area of the mine.

* * * *

Nitrate of Potash from South Africa.

We have received from the South African Nitrate and Potash Corporation, Ltd., a book of reports, sketches, analyses and photographs, together with a statement of capital. The company has been registered with an initial capital of £160,000. A description and criticism of this interesting proposition will be given in our next number.

* * * *

Miners' Phthisis Prevention Committee.

It is notified that the Minister of Mines and Industries has been pleased to dissolve, as from the 31st March, 1919, the Miners' Phthisis Prevention Committee which was appointed under Government Notice No. 291 appearing in the *Union Gazette* of the 27th February, 1912. The President of the Chamber of Mines at the annual meeting of that body on Monday paid a tribute to the good work done by the Phthisis Committee.

* * * *

A Copper Combine.

As all interested in the production of copper are aware, the position of the metal is unquestionably serious. For war purposes American mine owners greatly augmented their output, and since the signing of the armistice the demand has diminished, and vast accumulations remain in the hands of smelters and others. As much of this copper was produced at prices above those now ruling, output is to be drastically curtailed, and wages are to be cut down. Seeing that unrestricted competition in the matter of selling would create chaos, an American Copper Export Association has been formed to act as exclusive agents for the sale of export copper produced by both the large and small mines. This arrangement is to be heartily welcomed, as it will undoubtedly have the effect of steadying the market.

* * * *

Union Mining Output in February.

The mineral output of the Union for February was valued at £3,628,721, being a decrease on the January total of £107,279. The diamond declaration was 170,976 carats, representing £530,421, which closely approximated to January total, the difference being only 665 carats and in value slightly over £1,000. The number of tons of coal sold was 798,184 which had the value at the pit's mouth of £270,545, a decrease on the previous month in

tonnage of 74,417 and in value £20,485. Transvaal produced 510,172 tons, a decrease of 63,805; Cape 367, an increase of 52; Free State 63,757, a decrease of 3,259; and Natal 223,888, a decrease of 7,405. Transvaal shipped 2,133 tons of copper which had the value of £83,898 and which was the highest output for the year, but in June last 2,032 tons had the marketable value of £118,612. Silver was produced to the extent of 69,515 ozs. with the value of £13,904. The labour return shows that 31,924 whites and 241,687 coloured were employed in mining in February throughout the Union, the former being an increase of 797, and the latter of 19,714. An appendix to the Government statistics gives the value of stores consumed by the mines during 1918 at £15,267,870, of which Transvaal mines spent £13,948,042. The total was an increase on the previous year of £344,605 and on 1914 of £3,043,335. The consumption of South African and Rhodesian products by the mines was valued at £8,704,791.

* * * *

Katanga Copper.

With regard to the recently published statement that Mr. Franck, the Belgian Minister for the Colonies, has made arrangements that the Katanga copper should no longer be shipped to England, but sent direct to Antwerp, it is stated that this report is incorrect and has probably been given rise to by the fact that an experimental shipment of 200 tons of Katanga copper is being made to Antwerp by way of the Lower Congo. While British railways in South Africa and the British steamship lines serving that country have every interest to preserve the considerable traffic provided by the Union Minière Company (which produces the Katanga copper), and it is probable that the companies concerned will leave no stone unturned to retain this; on the other hand, it is only natural that the Belgian Government should wish to import into Belgium at least some portion of the copper production of the Congo Colony. In order to harmonise these two interests it is suggested that it is only necessary for the British steamship lines to make arrangements to discharge at Antwerp, where the disappearance of the great German steamship companies has left a vast field open for the Allied lines.

* * * *

Mr. Oppenheimer's Generous Gift.

A Pretoria message makes what, so far as we are aware, is the first public announcement of the fact that Mr. Ernest Oppenheimer, ex-Mayor of Kimberley, has given the sum of £2,000, which he has placed in the hands of General Smuts, to be utilised by the Union Government for defraying the preliminary expenditure in connection with the scheme for the provision of a South African War Memorial, on the preparatory stages of the organisation of which important national undertaking, it is further stated, General Smuts has been busily engaged for some time past. The *Diamond Fields Advertiser* comments on this gift as follows: "It is needless to say that this announcement will be a source of popular interest and gratification in all parts of South Africa, and nowhere more so than on the Diamond Fields, where Mr. Oppenheimer's valuable public services during the period of his Mayoralty, and the generous support he has previously given to various local and national objects—more particularly in connection with the raising of the 2nd Kimberley Regiment, under Colonel Rodger, at the time of the rebellion, the recruiting of natives in connection with railway building during the South-West Africa campaign, the Governor-General's Fund, of the local branch of which Mr. Oppenheimer was the first chairman, and other public activities during the war period—have won for him a wide measure of gratitude and esteem."

* * * *

Imperial Mineral Resources Bureau.

The present position of this Bureau is set forth in a circular issued by the organising secretary, Mr. Arnold D. McNair, as follows:—With reference to the announcement of the Minister of Reconstruction that the Imperial Conference, after considering the report of a committee of which Sir James Stevenson, Bart., was chairman, had made a recommendation in favour of the constitution of an Imperial

Mineral Resources Bureau, this body was set up and charged with the duties of collecting information regarding the mineral resources and metal requirements of the Empire, and of advising the various Governments and others concerned from time to time what action might appear to be desirable to enable those resources to be developed and made available to meet the requirements of the Empire. In accordance with this recommendation, the Governors of the Bureau were appointed, one by the Home Government (whose representative is the chairman of the Bureau), one by each of the five self-governing Dominions, one each by the Government of India and the Secretary of State for the Colonies, while six representatives of the mineral, mining and metal industries were appointed by the Minister of Reconstruction, after consultation with the principal institutes and institutions representing those industries. Pending the grant of the charter of the Bureau the Governors have lost no time in laying the foundation of their work and organisation. Four committees of Governors have been appointed to deal with:—(1) Intelligence and publications; (2) research and development; (3) legal matters; and (4) general purposes and finance. Various departments and other bodies interested have been invited to send representatives to discuss with the Governors the methods to be adopted to co-ordinate and make available for use within the Empire, by or through the appropriate agencies, exhaustive information upon mineral resources in respect of production, treatment, consumption and requirements. Offices have been taken at 14, Great Smith Street, Westminster, S.W.1., where all communications should be addressed to the Organising Secretary, Imperial Mineral Resources Bureau.

* * * *

Steel Trade Prospects.

If there is one trade more than any other which, observes the *Statist*, can look into the immediate future with confidence it is the steel trade in all its branches. Iron or steel will enter more or less into almost every process of material reconstruction. The demand for rails, bridges, ships, tools of every description, steel-fortified buildings, agricultural implements, etc., will be very great, and should last for three or four years at least. Before the war Germany exported more steel than any other country. In order to pay war indemnities she must continue to export much produce, and her steel-works will have to contribute. But her loss of Alsace-Lorraine will take an output of from five to six million tons from her. By this France will benefit, and for some time France will be able to absorb all her output of steel. The feeding of the outside world with steel will, therefore, devolve mainly on the United States and Great Britain.

* * * *

Industrial Questions in the Union Parliament.

Mr. Schurink asked the Minister of Mines: (1) Whether he is aware that the world's production of gold has fallen from £97,000,000 in 1915 to £78,000,000 in 1918, or a decrease of 20 per cent. in three years; (2) whether the Government intends to introduce legislation whereby the gold production of the Union will be increased by more encouragement being given to prospectors in those parts of the Transvaal where, by reason of the absence of facilities for prospecting on gold-bearing ground, the production of gold is seriously retarded; and (3) whether the Government intends to take steps, and, if so, what steps, to prevent certain mines on the Witwatersrand from closing down as a result of their not paying consequent upon the high costs of production as compared with the price of the product? The Minister replied: (1) The estimate given by the hon. member is probably correct. (2) The attention of the hon. member is drawn to the legislation passed last year, which provides for certain facilities being granted to prospectors in connection with prospecting operations in addition to those provided for under the Precious and Base Metals Act, 1908, of the Transvaal. Moreover, provision has already been made in the estimates for a substantial sum for the improvement of communications in the more remote mining districts. (3) The question of the poorer mines has had very careful consideration, but is not considered to call for further action on the part of the Government, it being hoped that a reduction in the cost of materials, and other economies, may help the position considerably in the near future.

TOPICS OF THE WEEK.

THE MENACE TO DEMOCRACY.

We cannot pretend to regard events in Johannesburg during the last week with equanimity. A Strike Committee representing the power station and tramway employees, in conjunction with the clerical and other departments of the Municipal service now on strike, has constituted itself a Board of Control and taken over the working of the Municipal services. Though disguised behind fine phrases about the need for co-operation and a desire to serve the public and save them from an incompetent Town Council, the movement is simply Bolshevism or the usurpation of Municipal government by a Soviet or workmen's council. How long the anomaly will be allowed to continue remains a question for the Government, and the Ministers of Justice and of Defence are, we understand, now in person investigating the position. Meanwhile, what plain people mostly dread is the spread of the trouble to other industries. No one denies that many workers have cause for complaint in England and America, where the collapse of stimulated and special war industries has necessarily reduced production and thrown many men out of employment. But in South Africa conditions are different, and the fact that the decision to retrench thirty Municipal employees should precipitate a strike of the present serious nature goes to show that the grievance was but symptomatic of the gathering feeling of unrest. The revolutionary turn now given to the movement merely goes to confirm that suspicion. The time has now come for plain speaking, and for clear recognition by all right-thinking men of the issues we are faced with. A forceful and timely lesson in how to deal with a similar crisis comes to us from across the water. Only a few weeks ago, Bolshevism reached out a feeler to try the firmness of democracy in the United States. It chose a city rich, flourishing, notable as a great port, a stopping place on one of the principal highways of international trade, and yet detached from the crowded centres of American life. The leaders hoped that measures of suppression at such a place would be less vigorous, because there would be a less insistent call from neighbouring communities to extinguish the threatening flame of anarchy. The point was well chosen; Seattle afforded strategic advantages for an experiment in substituting the principle of the soviet for the administration of justice by a representative government. Had insubordination desolated Seattle, had civil strife developed there into a human horror, the evil of Bolshevism might have spread in the United States, as the friends of Trotsky and Lenin desired. Seattle, however, branded the "general strike" as "revolution" and issued a statement that, unless the strikers should yield by a certain date and hour, they would face the power of the United States Army. The Mayor knew how to employ the forceful persuasion of an ultimatum so that the would-be Bolsheviks recognised that he had in truth given them his last word. Democracy, sanity, the government of the people, by the people and for the people, has been thus vindicated in America. Would that we could say of South Africa as it has been well said of America, "the Bolsheviks, alien in spirit and mind, may as well give up their hope of corrupting the sound principles of democracy. The country is not yet ready to abandon its ideals of government or the standard of living that gives opportunity to save against the stringencies of old age and to push forward the children of each generation to larger achievement. We are not disposed to plunge into the abyss with disordered Russia, nor to clamour against the bewildering financial difficulties of reconstruction as an injustice to be resisted by destroying industry. Troubled employers of labour, trying to find their way back to normal business, need the co-operation of labour, just as labour needs the guidance of the managers of industry, in order that all concerned may be saved from hardship and suffering." With us to-day the danger is just as great and insidious as it was in America and demands the most prompt and determined action on the part of the Government to destroy the beginnings of Bolshevism in our midst.

Released from Admiralty Control

DELTA METAL

The Delta Metal Company, Limited, East Greenwich, have cabled that they are again open to receive orders for South Africa.

SOLE AGENT:

TEL. NO. 5892.

H. ALERS HANKEY,

P.O. BOX 3807.

STANDARD BANK CHAMBERS, JOHANNESBURG.

THE GREATER HEIDELBERG GOLDFIELDS.—VI.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

The Townlands, Houtpoort and Boschfontein Properties.

In our last issue we brought our survey of the Greater Heidelberg Gold Fields down to the town of Heidelberg, after having attempted in previous issues to present a more concise chronology of developments in this field than has hitherto been possible. Our last article concluded with a brief review of the companies which have been floated on the basis of the theory that the Van Ryn Reef overlies the Nigel Reef. The active prospecting of a number of the properties referred to in the last issue is now proceeding under the auspices of Dr. Hans Sauer and Mr. William Bleloeh. Three large diamond drills and a small drill are being employed to test the town lands, Boschhoek and Eendracht properties, and a large amount of trenching and shaft sinking is proceeding.

The deepest borehole is located on the farm Eendracht No. 267. This hole is being sunk by Dr. Hans Sauer under agreement with the Oceana Company. On the farm Eendracht the strata may be observed in some very clear and well-defined exposures, notably in the vicinity of the Homestead and close to the present diamond drill site. The quartzitic and sandstone beds are here shown in perfect conformity with a line of strike which is approximately N.E. and S.W. and a dip of about 10 degrees to the north-west. The drill on Eendracht is a Sullivan P. drill with capacity to work to a depth of 6,000 feet. Work on this hole was commenced in April of last year and was at first difficult and slow. Latterly, however, excellent progress has been attained and a few weeks ago a reef series was encountered at a depth of 2,350 feet. The values disclosed were, we understand, very poor. The section as shown by the cores is as follows:—Eendracht borehole: 2,350 ft., banket series; 1 ft. banket; 19 ft., 7 in. quartzite; 2,370 ft. 3 in., 3 ft. banket; 13 in. quartzite; 12 in. reef; 5 ft. quartzite; 2,380 ft. 4 in., conglomerate 4 ft. 4 in. wide, laying on 12 ft. 6 in. of schist and slate. At the time of writing this drill has penetrated to a depth of 2,614 feet and at that depth was still in quartzite.

BOSCHFONTEIN AND BOSCHHOEK.

Leaving Heidelberg to the north-west and travelling along the Vereeniging Road, one crosses the farm Boschfontein No. 271, the mineral rights of which (as to 3,000 acres) are held by the Boschfontein Gold Mine, Ltd. No work is being done on this property at present, but some years ago a certain amount of development was undertaken at a shallow depth. There is a reef exposed in a cutting alongside this road. This reef, which lies on slate, shows a line of strike approximately N.E. and S.W. and dip to the N.W. Adjoining Boschfontein is Boschhoek No. 270, the property of the Boschhoek Proprietary, Ltd., which has a capital of £360,000. A borehole is being sunk here by agreement with Dr. Sauer. The drill is a Sullivan P. machine, and at the time of writing the core was disclosing a fine-grained diabase at 1,226 feet. This diabase is now showing calcite amydales and it is thought that from these indications the diabase will soon be penetrated through. The drill encountered a bed of slate from 600 to 705 feet and then entered the diabase. To the north of this hole is the old No. 1 Boschhoek borehole which was stopped in dyke at 960 feet. This hole, it is contended, cut the Van Ryn Reef at about 122 feet, but the core was ground and assays were poor. This reef is correlated with the exposure in the cutting alongside the Vereeniging road on Boschhoek already referred to.

THE TOWNLANDS PROPERTIES.

On the eastern side of the town of Heidelberg the Eastern Van Ryn and Modderfontein Gold Reefs, Ltd., are prospecting 1,151 claims, whilst a further 1,000 claims on the dip of this property have been acquired by Dr. Hans Sauer and may eventually be consolidated into one property. On the Eastern Van Ryn & Modderfontein Gold Reefs, Ltd. prospecting on the western portion has been undertaken in a number of shafts and cuttings. In the No. 1 or A. working a 12-inch ore body lying on quartzite with slate underneath with a dip of about 12 deg. was being opened up and the reef appeared to be widening at the time of our representative's visit. In the B. workings further to the east, too, the reef appears to be "making." In the C. workings the dip is steeper and further east again the reef in the D. prospect is larger and has yielded 5 dwts. over 24 ins. In the next (or, as they are termed, "Eastern") workings the reef had been sunk on to a depth of 111 feet and was yielding 6 dwts. over 4 ins. We are informed that during the past three weeks, that is, since our visit, the values disclosed in the prospecting shafts on the reef identified as the Van Ryn have greatly improved. On the Eastern Van Ryn & Modderfontein Gold Reefs, Ltd., an old borehole was sunk some years ago which encountered a reef lying on shale at a depth of 1,943 feet. This reef assayed 11 dwts. over 3 ins. and was correlated with the Nigel. Under the present ægis a borehole was sunk to a depth of 265 feet but was stopped at this depth, as it was considered to be below the horizon of the Van Ryn series. Another hole has now been located 1,200 ft. to the south of this and has reached a depth of 121 ft. It is estimated that in this hole the reef will be encountered somewhere around 1,500 ft. Further to the east another drill of Sullivan H. pattern has been sunk to 219 ft.

HOUTPOORT ACTIVITIES.

Adjoining the town lands are the properties of Houtpoort, Ltd. Prospecting and developing work are proceeding on Klippoortje and Tulipvale, and along the railway line to the north-east of Heidelberg a well-developed line of reef, containing a number of black and striped pebbles with schistose enclosures, can be followed for a considerable distance. This outcrop which runs almost parallel with the railway is on Klippoortje, where two boreholes which obtained negative results were put down some years ago. In the vicinity of the No. 6 shaft on the workings of Houtpoort, Ltd., the reef has been broken by an east and west line of faulting, but it has been located again, and in some portions assays of 10 dwts. over 2 ft. of reef are stated to have been obtained. Other workings on this section are styled the Nos. 2, 8 and 9 and K. 1 and K. 2 prospects. The K. 1 workings got into dyke and no reef was to be observed in this faulted zone at the time of our representative's visit. The K. 2 workings have followed the reef down to 37 ft. and at this depth the conglomerate body is shown to be 2 ft. 4½ in. and lying on schist. This reef section has been divided into three portions and has given the following assays: 4 in., 3¼ dwts.; 12½ in., 11 dwts.; 12 in., 2½ dwts. In the No. 9 workings the reef has given values of 5 dwts. over 4 ft. at a depth of 70 ft.

TULIPVALE.

To the south-east of Klippoortje lies Tulipvale, which is also a portion of the Houtpoort property. From the house just inside the fence and gate on the boundary of Tulipvale a view is to be obtained to a corner of the Nigel mine, whilst to the west lies Heidelberg. A distance of twelve miles intervenes between Tulipvale and the extremity of Boschfontein and the greater portion of this ground is held by the Bleloch-Sauer interests. On the northern boundary of Tulipvale, within 120 ft. of the Blesbokspruit and lying direct on slate is a reef 6 ft. 6 in., of which the bottom 6 in. assayed 10 dwts., and the other part 4 dwts. South of Tulipvale is the farm Poortje, referred to in our last issue.

Public attention has been focussed on these properties during the past week on account of a Reuter cable received from London stating that the Central Mining and Investment Corporation had come to a working agreement with Dr. Sauer for the exploitation of the Houtpoort-Eendracht town lands areas. We comment on this cable elsewhere in this issue.

(To be continued.)

Cold Mining Results in 1918.

The Transvaal gold mines made profits in 1918 totalling £7,678,129 as against £10,486,283 for the previous year, a decrease of £2,725,368. The dividends declared in 1918 amounted to £5,273,633, which total is £1,444,971 less than that for 1917. Particulars given in the Chamber of Mines' progressive statement of gold production are as follows:—

	1918.	1917.
Tons milled	25,267,302	27,862,851
Stamps	8,878	9,470
Tube mills	338	332
Value of output	£35,768,688	£38,323,921
Total per ton milled	28/1	27/3
Total working costs	£27,318,600	£26,857,837
Costs per ton	21/8	19/4
Profit per ton	6/1	7/6

The totals and averages for the Witwatersrand are as follows:—

	1917.	1918.
Tons hoisted	27,031,448	29,549,949
Percentage of waste sorted	7.80	7.73
Tons milled	24,922,763	27,251,960
Stamps	8,565	9,029
Tube mills	331	323
Total output	34,823,017	37,017,633
Per ton milled	27/11	27/1
Total working costs	£26,848,547	£26,129,156
Costs per ton	21/7	19/2
Total working profit	£7,500,270	£10,225,638
Profit per ton	6/-	7/6
Dividends declared	£5,144,077	£6,556,188

Cold and Coinage.

There is no room to doubt, state Messrs. Samuel Montagu & Co. in their annual review of the Bullion market, that arrangements will be made by which, on the free resumption of trade, Bank of England notes will continue to be, as before and during the war, cashable in gold, but it is unlikely that gold will circulate as freely in the United Kingdom as heretofore for at least two reasons. The practice will be discouraged generally by banks owing to shortage of the metal for international use, and the public will have become accustomed to the convenience of using paper in lieu of metallic money, particularly if notes be withdrawn as soon as signs of undue wear becomes apparent. The latter half of the past year was noteworthy for an expansion in the Bank of England issue. Inasmuch as the fiduciary reserve is fixed at a certain proportion by law, the total of the gold reserves necessarily rose to correspond, and an increase was reported for the last 35 weeks in succession. The Royal Mint reported the issue of gold coin as detailed below:—1917, England £1,014,000; Australia, £6,710,755; Canada, £187; total

£7,724,942. From tables compared by Mr. Joseph Kitchin it appears that the aggregate stock of gold money has risen from £1,461,000,000 in 1910 to £1,935,000,000 in 1918; while the aggregate stock of gold money per head of the world's population rose from 209d. to 259d. The stock of gold money mentioned excludes all gold in India and Egypt. The annual gold production in 1900 was £52,300,000, in 1910 £93,700,000, and in 1918 £81,000,000. [This estimate does not agree with that of the *New York Mining and Engineering Journal*, which is £77,600,000.—Ed.] The stock of gold money advanced 4d. per head per annum from 1910 to 1913, and in the following three years 8d. per head per annum, as a result of the war reducing both the demands of India and the industrial consumption of the rest of the world. In 1917 India reappeared as a large absorber, but in 1918 its requirements dropped to a minimum as a result of Government measures, limiting its use. The later import figures relating to India are estimates; no official figures have been published since September, 1917. The annual production was less by £4,600,000 in 1917, and the 1918 total (if the estimates be correct) will show a decline of 16 per cent. below that of 1915. The reduction in the output of gold, calculated on the basis of the 1915 total, was 2 per cent. in 1916, 9 per cent. in 1917, and probably about 16 per cent. in 1918. In India a reversion to the practice obtaining prior to the closure of the Mints to free coinage has been made by the mintage of a mohur. In addition to the prohibition already in force, making the reduction of current gold coin to bullion illegal, the Government of India has prohibited dealings in any legal tender coin above its face value, so as to safeguard the new coin for the chief purpose for which it has been struck—namely, the financing of crops, principally in the Punjab. As a further assistance in controlling the currency, the carriage of metallic currency by inland steam vessels is now allowed only subject to licence. The total amount of gold acquired by the Indian Government during the financial year 1917-18 under the Gold (Import) Ordinance (which affected imports after the 29th June, 1917) was valued at Rs18,36,66,547. An annual excess of exports from India, amounting to about 3s. 4d. a head, shows (considering the exiguous individual earning power of the producers) the satisfactory condition of Indian trade.

Messrs. Dick, Kerr & Co., Ltd., have recently secured a contract for the supply of a 3,000 k.w. 3,000 r.p.m. turbo-alternator set, together with condensing plant, to Messrs. Cammel, Laird & Co., Ltd. The turbine will be of the Willans-Zoelly type, to operate on steam at 160 lb. pressure, superheated to 650 degrees F., and the condensing plant of the surface type, with the Willans rotary system of air extraction, the circulating, ejector and extraction pumps being driven by an auxiliary turbine which will exhaust into a feed heater. The turbo-alternator, by Messrs. Siemens, will supply three-phase current at 3,300 volts, 50 cycles, and will be fitted with an overhung exciter.

Companhia de Mocambique.

The report for the year 1917 states that in Africa there was a profit of £14,684, which, with various rectifications and additions, including profits on cotton and cattle, is brought up to £32,211, and the balance sheet drawn up at Lisbon shows a loss of £4,592, making a balance of net profit of £27,619. To this is added £47,544 brought in from 1916, plus the special reserve fund transferred to profit and loss, amounting to £51,088, making a total profit of £126,251. Deducting certain percentages and reserves, there is an available sum of £99,637, which will permit the distribution of a dividend of 5 per cent. and certain statutory percentages, leaving a balance to be carried forward again. To the debit of "accounts to be liquidated" in Africa, figure the expenses and the losses of the revolt of the Barue known up to December 31st last and the remainder of the expenses of the war with Germany in the same conditions. In regard to the first, the Government has charged a Special Commission to analyse the accounts of the revolt of the Barue, in order to reimburse the company. As to the expenses of the war with Germany, the company will be equally reimbursed by the Government, which has already liquidated an important part of these expenses.

DIAMOND PROPOSITIONS; AN INTERESTING RESUMÉ.

Particulars of Flotations which are now Engaging Attention—Capitals, Directors, Properties and Operations.

In view of the interest that is being taken in diamond stocks at the present time, the following information, which sets forth the capital, property, directors, etc., of the principal diamond concerns which are now engaging attention, should prove of interest.

CROWN DIAMOND MINING AND EXPLORATION CO., LTD.

Directors: J. Emrys Evans, C.M.G. (chairman), alternate G. R. Lewis, Isaac Lewis, Louis Marks, Samuel Marks, alternate G. Falcke, William Ross. Secretaries: The African and European Investment Co., Ltd., Lewis & Marks' Building, Johannesburg. Present capital: £125,000 in £1 shares. The property of the company comprises the freehold farms Driekopjes No. 630 and Ruby No. 961, both situated in the Kroonstad district, O.F.S. Province, of a combined area of 2,335 morgen 118 square rods. Recent operations have been much hampered by the fact that the company has a considerable debt and it is important to note that it is now proposed to increase the capital to £250,000, of which £20,000 will be allocated to reserve. The new shares are being guaranteed by Messrs. Lewis & Marks at par, and the capital provided by the new issue will be sufficient to liquidate existing liabilities and put the company on a sound financial basis. The outstanding feature of recent developments has been the continued disclosure of satisfactory blue ground in the drives which have been pushed out in four directions from a shaft which has been sunk to a depth of 300 feet from the 140 ft. level.

KOODOO DIAMOND MINING SYNDICATE, LTD.

Directors: H. J. Rogaly, F. J. Bruns and S. J. Davidson. Secretary: S. J. Davidson. Capital: £4,500; £3,000 to vendors in shares; working capital £1,500 in 10s. shares. Property: Prospecting rights over 2,500 morgen of the farm Uitkyk, C.P. Washing operations commencing.

MAKGANYENE DIAMOND SYNDICATE, LTD.

Directors: W. J. Gibson (chairman), T. G. McLelland (managing director), W. E. Bleloch, H. Richter. Secretary: J. S. Richardson, New Stock Exchange. Capital: £14,500 in £1 shares, with power to increase up to £100,000. Such increases from time to time have to be offered to the vendors at par. The first increase of £10,000 has been made and all the issue taken up. The property consists of the farm Makganyene (140 miles west of Kimberley), which is held under optional contract with the right to purchase diamond rights and 500 morgen for £15,000 and 5,000 shares. If purchased before 27th April these rights may be purchased for £10,000, of which £700 already has been paid. On the farm a mine of considerable size has been proved. The first return of diamonds during the initial prospecting period was disappointing, but a measuring up of all the yellow ground extracted from the mine shows a payable recovery in prospecting operations. These operations resulted in 157 carats being discovered and the diamonds are stated to be of the finest average quality ever produced by any mine in South Africa. They were sold at £6 per carat some time ago and are now probably worth £7 10s. to £8 per carat. It is estimated that with proper treatment the yield should be a minimum of 4 carats per 100 loads. The diamonds are of brilliant white colour and remarkably uniform in quality. The largest diamond so far found was of 11½ carats, valued at £22 per carat. Recent operations have been hampered by heavy rains, but finds are reported to be good.

MONTELEO DIAMONDS.

Directors: H. de V. Steytler (chairman), alternate A. Holloway, William Ross, A. Aiken, A. P. Everitt, Dr. S. Kaufmann, Dr. R. A. Ross, L. C. Reinecke. Secretary: S. B. Dowling, 29-32 Bettelheim Buildings, Johannesburg. Capital: £47,500 in £1 shares. Property: Freehold farm

Monteleo No. 1,528, district Winburg, O.F.S., in extent 200 morgen. During the period ended September 30, 1918, hauling and washing operations were at various intervals considerably retarded by the exceptionally heavy rain during the last rainy season, which on more than one occasion flooded the mine. The value per 100 loads of ground washed works out at £41 12s. 3·76d. Over 5,000 loads of lumps have been included in the ground washed, thus considerably reducing the average yield per 100 loads.

ROBERTS VICTOR DIAMONDS, LTD.

Directors: J. E. Evans (chairman), Sir J. G. Fraser (life director), A. J. Roberts (life director), M. Dold, I. Lewis, S. Marks, C. F. Rowsell. London Transfer Committee: A. Hird, C. F. Rowsell. Secretaries and Offices: African and European Investment Co., Ltd., Lewis and Marks Building, Box 2567, Johannesburg. London Secretary and Offices: T. Aspling, 31 Bishopsgate, E.C. Registered January 9, 1906, in the Transvaal, and has acquired a 25 years' lease, with right of renewal for a further 25 years, on farm Damplaats No. 319, 20 miles north-east of Boshof, Orange Free State. The consideration was £9,000 cash and £132,500 in fully-paid shares. In October, 1906, the adjoining farm Rietkuil No. 269, 2,335 morgen, was acquired for £8,636, and in 1907 the freehold farm Waailhoek No. 102, 2,446 morgen on the southern bank of the Modder River and five morgen of the freehold farm Waterval on the northern side of the river, on which is erected the water pumping station. Prospecting rights are also held over the remainder of farm Damplaats having an area of 11,238 acres. The Government is entitled to four-tenths of profits. A plant capable of treating 1,200 loads per day is erected. During 1913, 168,334 loads yielded 52,307 carats, or 31·0 per 100 loads. From March 2, 1914 (when washing was resumed), to August 31, 1914, 102,039 loads yielded 28,725 carats, or 28·1 per 100 loads. Owing to contraction of the pipe coupled with low average yield, work on the old mine has ceased, and operations have been directed to developing two new areas equal to 50 claims, situate to the south-west of the old mine. On the outbreak of the European war all operations were suspended. Capital: £160,000, in shares of £1 each; 150,000 shares are issued and fully paid, including vendors'; 17,500 shares were subscribed at £2 each. Dividends: For 1907, 50 per cent.; 1908, nil; 1909, 25 per cent.; 1910-12, nil; 1913, 10 per cent. paid December; nil since.

SOUTH-WESTERN DIAMONDS, LTD.

Directors: Messrs. A. C. Hughes, Birch and Carroll. Manager: J. W. Craig. The object of the company is to dredge for diamonds off the shore of South-West Africa in the neighbourhood of Pomona, and a concession from the Government has been obtained for that purpose, the royalty payable being 40 per cent. Capital: £250,000, of which the vendors take half, and the balance will be issued for working capital, as and when required. An initial amount of £10,000 has been subscribed, and guarantees for further amounts secured.

NEW ELAND DIAMONDS, LTD.

Directors: Sir Thomas Cullinan (chairman), Edmund Brayshaw, alternate H. C. Ramsden, Bentley S. Wimble, Bertram W. Brayshaw, Thomas William Cullinan. Secretary: C. S. Wimble, P.O. Box 5323, Johannesburg. Capital: £75,000 in 75,000 shares of £1 each. Property: 500 morgen freehold on the farm New Eland No. 949, district Boshof, O.F.S. Recent operations are referred to elsewhere in this issue.

Swaziland Tin.

The following are the results of the operations of the Swaziland Tin Company for the month of February, 1919: Concentrate recovered, 32·3 long tons; estimated profit for the month (taking tin at £200 per ton), £1,024.

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THE YEAR WITH THE MODDER B.

Points from the Consulting Engineer's Report—Ore Reserve Position to be Strengthened—Improving Outlook.

In his report for 1918, the Consulting Engineer of the Modder B., Mr. H. Stuart Martin, writes:—The following figures compare the leading features of the last two year's operations:— Tons milled: 1917, 517,500; 1918, 605,500. Yield per ton milled: 1917, 46s. 2d.; 1918, 41s. 5d. Working costs per ton milled: 1917, 19s. 5d.; 1918, 19s. 8d. Profit per ton milled: 1917, 26s. 9d.; 1918, 21s. 9d. Total working profit: 1917, £691,087; 1918, £658,587. Payable ore reserve—tons: 1917, 3,523,810; 1918, 3,378,000. Value per ton—dwts.: 1917, 9'2; 1918, 9'2. The additions to the reduction plant, which were completed about the middle of the year, enabled the tonnage milled to show an increase of 88,000 tons. The average yield for the year was 4s. 9d. per ton milled less than in 1917. The fall took place principally in the latter half of the year, when unavoidable delays occurred in connection with the equipment of the richer and deeper areas in the south-western section of the mine, and the increased tonnage requirements were made up from relatively lower grade districts. This work was completed towards the end of the year, and since the close of the financial year there has been a considerable improvement in the output from this part of the mine, with a commensurate improvement in yield. In spite of the considerable abnormal expenditure in connection with equipping the lower levels with hoists, air and water mains, haulages, etc., together with the higher cost of stores, and other disabilities connected with the circumstances prevailing in 1918, working costs showed an increase of only 3d. per ton milled. The increased tonnage scarcely counteracted the lower yield and the working profit consequently decreased £32,500. Development operations were conducted on a moderate scale, more particularly in the first half of the year when native labour was scarce. The payable tonnage developed is estimated at 596,400 tons of 9'3 dwts. per ton value, which was insufficient to maintain the ore reserve position, this on re-measurement and re-valuation being estimated at 3,378,000 tons, averaging 9'2 dwts. in value over a stoping width of 62 inches. Compared with the preceding year, the ore reserve tonnage shows a reduction of practically 150,000 tons, whilst the value is unchanged, over one inch greater stoping width. Of the ore in reserve 1,529,000 tons, or 45 per cent., are over 10 dwts. in value, averaging 12'7 dwts. per ton. During the current year, which has opened with an ample supply of native labour, advantage will be taken to push development operations and further strengthen the ore reserve position. The plan of the underground workings attached to this report shows clearly the satisfactory position of the ore reserves in regard to the general underground workings. Certain particularly favourable features have recently been encountered in the south-eastern unexplored area of the mine. The Geduld Proprietary Company, Ltd., has been kind enough to assist this company in testing this area by extending one of its workings into the Modderfontein

B. Company's property. This heading, the position of which is shown on the plan, has at the time of writing extended 225 feet into this company's property, and has exposed an average reef width and value of 58 inches and 20 dwts., a highly encouraging result. In the deeper central portion of the mine, where very poor results have hitherto been found on the 3rd and 4th levels, a winze, marked on the plan as 7'5, has recently been sunk with encouraging results, the average reef width and value for 120 feet being 8 inches and 65'7 dwts. It will be seen that the central shaft has hitherto been fully capable of dealing with comparatively shallow workings down to the 5th level, but it will be insufficient to deal with the development and exploitation of the large intact area of the southern and eastern portion of the property. With this object in view, a new shaft will be sunk at the spot indicated on the plan. It will be 20 feet in diameter and approximately 1,800 feet in depth, and with this as a base the development and equipment of this section of the mine can be undertaken at leisure. Capital expenditure for the year was principally in connection with the increase to the reduction plant, underground equipment and additional accommodation for workmen. The mine and plant are now fully equipped for an output of 60,000 tons a month, and given reasonably favourable circumstances and some relief from the disabilities consequent on war conditions, the current year's operations should result in a considerable increase in profit and an improvement in the ore reserve position. The manager, staff and employees are to be congratulated for bringing the mine to its present satisfactory position.

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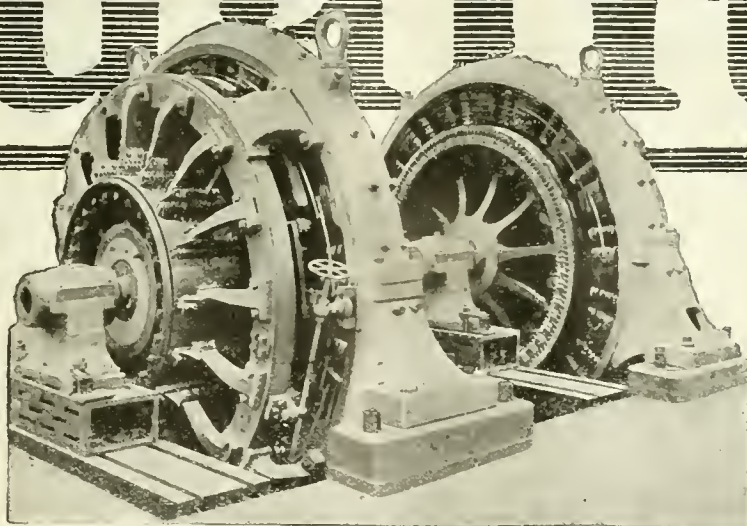
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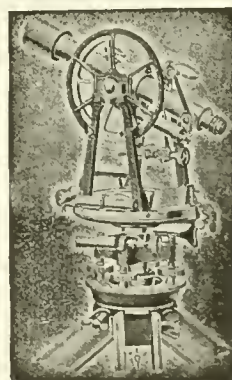
Action by the Rand Selection and New Era Companies.

THE purchase of enemy holdings by Rand companies proceeds apace. An agreement entered into on the 25th day of March, 1919, between the Custodian of Enemy Property in the Union of South Africa, and the directors of the New Era Consolidated, Ltd., wherein the directors agree to purchase from the Custodian 61,392 shares, more or less, in the New Era Consolidated, Ltd., held by him on behalf of enemy subjects, the purchase price being 8s. 9d. per share, was duly confirmed by the Supreme Court, Pretoria, on the 2nd April. It is one of the conditions of sale that these shares may (with the exception of a small balance of approximately 400 shares) only be re-issued by way of dividend to registered shareholders of the company, and the directors therefore propose to distribute such shares to shareholders registered on the 31st December next on the basis of 18 shares for every 100 shares then held.

RAND SELECTION.

An agreement entered into on the 25th day of March, 1919, between the Custodian of Enemy Property in the Union of South Africa and the directors of the Rand Selection Corporation, Ltd., wherein the directors agree to purchase from the Custodian 122,433 shares, more or less, in the Rand Selection Corporation, Ltd., held by him on behalf of enemy subjects, the purchase price being 73s. 6d. per share, was duly confirmed by the Supreme Court, Pretoria, on the 2nd April, 1919. It is one of the conditions of sale that these shares may only be re-issued by way of dividend or by sale to registered shareholders of the corporation, but in the latter event the offer to be at cost

thereof to the corporation. The directors propose to distribute by way of dividend to shareholders registered on June 30th next 42,206 of the said shares, being at the rate of 8 shares for every 100 shares held at that date, and to offer the balance to shareholders registered at the same date (1) *Pro rata* to their registered holding, i.e., approximately 15 shares for every 100 held. (2) Shareholders may apply for an additional number, the allocation of which must be left to the absolute discretion of the directors. A circular stating the price at which the shares may be applied for, together with application forms, will be issued to shareholders in due course.



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NEW BRITISH CAPITAL ISSUES: NEW PROCEDURE.

In the House of Commons recently, Mr. Stanley Baldwin, Financial Secretary to the Treasury, made an important statement as to the future of the Capital Issues Committee of the Treasury. He stated that control was still necessary in a modified form, and for that purpose new terms of reference would be drawn up. Oral evidence in support of an application before the Committee would be allowed, and in order to expedite matters the Committee, of which Lord Cunliffe will act as chairman, would be divided into panels and their decisions be subject to the confirmation of the full Committee. The matter was raised in the House by Viscount Wolmer and Mr. Samuel Samuel, their respective questions being: Whether the Chancellor of the Exchequer is yet able to make a statement in regard to the future of the Capital Issues Committee of the Treasury? If the Chancellor will say when it is proposed to make a statement regarding the Capital Issues Committee; and whether he will consider the possibility of abolishing all interference with the public freedom so as to develop freely the industries of the country? Mr. Stanley Baldwin, in reply, said the Reconstruction Committee on Currency and on Financial Facilities had advised that it was not possible under existing financial conditions to dispense altogether with the control of capital issues, and his right hon. friend had come to the conclusion that it was necessary, at any rate for the present, to continue this control in a modified form. It was imperative during the reconstruction period to preserve for undertakings which were essential for the speedy restoration of commerce and industry and the development of public utility services an adequate share of the capital which was available for investment and to prevent any avoidable drain upon the foreign exchanges. A regulation

under Defence of the Realm Act would accordingly be made forthwith prohibiting fresh issues except under licence. The enlargement of the purpose for which it would be proper to allow fresh issues might be expected to result in a great increase in the number of applications, and it had been represented to him that in the interests of applicants there should be machinery for allowing them to state their cases orally before the Committee if they desired to do so before any decision adverse to the application was arrived at. His right hon. friend had, therefore, decided to reconstitute and extend the Capital Issues Committee. The new terms of the reference were as follows:—To consider and advise upon applications received by the Treasury for licences under the Defence of the Realm Regulation for fresh issues of capital, with a view to preserving capital during the reconstruction period for essential undertakings in the United Kingdom and to preventing any avoidable drain upon foreign exchanges by the export of capital, except where it is shown to the satisfaction of the Treasury that special circumstances exist. It would be an instruction to the Committee that, in order that applications might be speedily dealt with and to enable oral evidence to be given in support of them when desired by the applicant, that the Committee should sit by panels, consisting of three members, the decision of the panels to be subject to confirmation by the full Committee. Lord Cunliffe had consented to act as Chairman of the new Committee, and further names would be announced in due course.

A farewell dinner was given to Mr. D. Wilkinson by a dozen leading consulting engineers of the Rand under the presidency of Mr. E. J. Way, last Saturday night.

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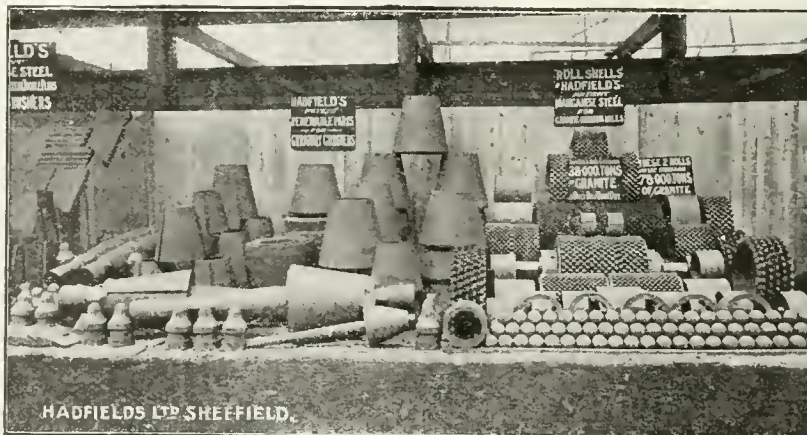
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TRANSVAAL CHAMBER OF MINES' ANNUAL REPORT.—II.

Official Review of Questions Dealt with During 1918.

THE following extracts cover most of the important matters dealt with by the Transvaal Chamber of Mines during last year:—

Influenza Epidemic.—The appearance of Spanish influenza in South Africa was followed in the latter part of September by an outbreak amongst the natives employed on the Witwatersrand gold mines. The disease rapidly spread throughout the whole country, and extended to Europeans as well as to natives. As a result, the operations of the mines were very seriously affected, not only by the mortality and sickness amongst their employees, but through the effect of the epidemic on the number of recruits coming forward. The British South African native labour supply almost entirely ceased during November and December, and in the middle of December it was found necessary to suspend recruiting in Portuguese East Africa owing to the prevalence of the disease there; so serious indeed was the position that the Portuguese Government prohibited the repatriation of natives from the Rand. At the close of the year, the British South African native labour supply showed signs of improvement, but the East Coast supply was still shut off. The number of fatal cases of Spanish influenza amongst the natives employed on mines, members of the Witwatersrand Native Labour Association, was 1,741, and the consequent death rate 9·70 per 1,000 per annum.

Health of Natives.—The death rate amongst native labourers employed by members of the Witwatersrand Native Labour Association, Ltd., during 1918 amounted to 21·04 per 1,000 per annum from disease, as compared with 10·75 in 1917. The increase in the death rate is entirely accounted for by the influenza epidemic, which, as already stated, is responsible for a death rate of 9·70 per 1,000 per annum. Having regard, however, to the death rate from the epidemic in other parts of South Africa, this may be regarded as satisfactory. The accident death rate, which was 2·87 per 1,000 in 1917, was 2·68 per 1,000 in 1918, and is the lowest on record.

Training of Native Hospital Orderlies.—The Chamber, on the advice of its Medical Officers' Committee, recommended to members a scheme for the training of native hospital orderlies under the immediate supervision of the European hospital attendants.

Sport on the Mines.—With a view to encouraging healthy outdoor sport on the mines, the organisation of inter-mine sporting competitions was taken in hand by the Prevention of Accidents Committee of the Rand Mutual Assurance Company, Ltd., in May, 1918, since when competitions have been held in football, cricket, tennis, golf and bowls. The total number of teams engaged is 172, comprising nearly 1,500 individuals.

Underground Officials' Association of South Africa.—As a result of negotiations between this Association and the Chamber, it has been agreed that the contract of employment of a member of the Association after three months' service shall be subject to one month's notice on either side. Discussions have also taken place on the subject of salaries and holiday leave regulations.

Demands of Mine Employees—War Bonus.—In June, the South African Industrial Federation, on behalf of its affiliated Unions, submitted various requests, including, inter alia, the cancellation of the agreement dated September 13th, 1916, in respect of the clause binding the Unions not to raise the question of wages until three months after the declaration of peace, in order to permit the consideration of the mechanics' war allowance being increased to make the total earnings received for a 48 hours' week £8 2s. In August the Chamber replied to these requests, offering for all employees a sliding scale of war bonus proportionate to the percentage increase in the cost of living, and refusing the request that the wages of members of the Mechanics' Unions be increased to £8 2s. a week. The Chamber's offer

was accepted by the Unions. The arrangement previously in force in regard to mechanics, under which the total war bonus which would have been granted to married mechanics under the scale is distributed over all the mechanics, remains in force under the new scale. Mechanics earning more than the standard rate of pay have also been granted a correspondingly increased war bonus. In October the South African Industrial Federation, on behalf of its affiliated Unions, submitted various requests in respect of collieries, including a request to increase the war bonus for colliery employees so as to make the total earnings £7 10s. per 48-hour week. Negotiations had not been concluded at the close of the year.

Monthly Paid Mechanics.—The Executive Committee has recommended to members that the minimum rate of pay for mechanics (other than foremen) who ask to be placed on and further, that as far as practicable the monthly basis of pay shall be substituted by an hourly basis.

Mechanics on other than Twenty-four Hours' Notice.—The Chamber has recommended to members that all mechanics (other than foremen) who ask to be placed on 24 hours' notice be so placed.

Iron Moulders' Society of South Africa.—A strike of the Iron Moulders' Society took place in August, following a demand for an increase in the standard rate of pay to £8 2s. per week of 48 hours. This demand was refused by the Chamber, and the small number of members of the Society employed on the mines went on strike. The strike terminated at the beginning of December, and the men returned to work upon the same standard rate as that of all other mine mechanics, and the same war bonus, according to a sliding scale. The strike constituted a breach in continuity of service for holiday leave purposes.

Overtime of Apprentices.—The Executive Committee has recommended to members that apprentice mechanics should work overtime as seldom as possible, and that when they do so they should be paid overtime rates.

Stationary and Locomotive Engine Drivers, Boiler Attendants, and Firemen (Gold Mines).—The agreement concluded in 1917 was amended during the year under review, on representations by the South African Engine Drivers' and Firemen's Association. The amendments include a definition of "shift," modify in certain respects the conditions affecting the long service bonus, and define more closely the duties in relation to the scale of minimum rates of pay.

Stationary and Locomotive Engine Drivers, Boiler Attendants and Firemen (Collieries).—An agreement has been entered into between the Colliery Committee and the South African Engine Drivers' and Firemen's Association relating to stationary and locomotive engine drivers, boiler attendants, and firemen. This agreement lays down certain minimum rates of pay for these classes of employees on collieries, and also deals with payment for overtime, Sunday work, and holidays.

Shaft Sinking—Engagement of Winding Engine Drivers.—The following agreement was arrived at in relation to shaft-sinking, at the instance of the S.A. Engine Drivers' and Firemen's Association: "Where vacancies for shaft-sinking work arise on an existing mine, and the management considers that some of the other engine drivers employed on the mines are competent to undertake the shaft-sinking work, these drivers should be offered the jobs, in order of seniority of service if other things are equal."

Training of Winding Engine Drivers.—As the result of representations from the Mines Department, towards the close of the year the S.A. Engine Drivers' and Firemen's Association and the Chamber were considering a scheme for the training of winding engine drivers

(To be continued)

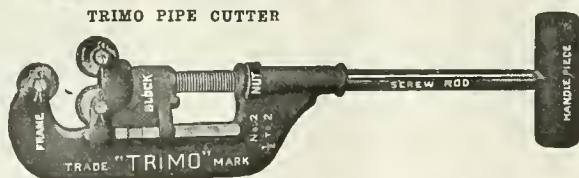
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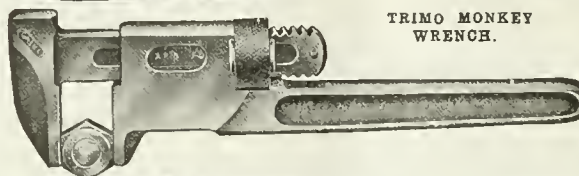
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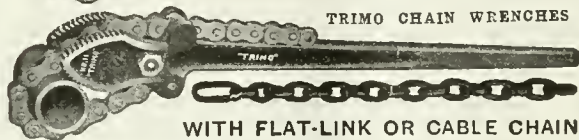
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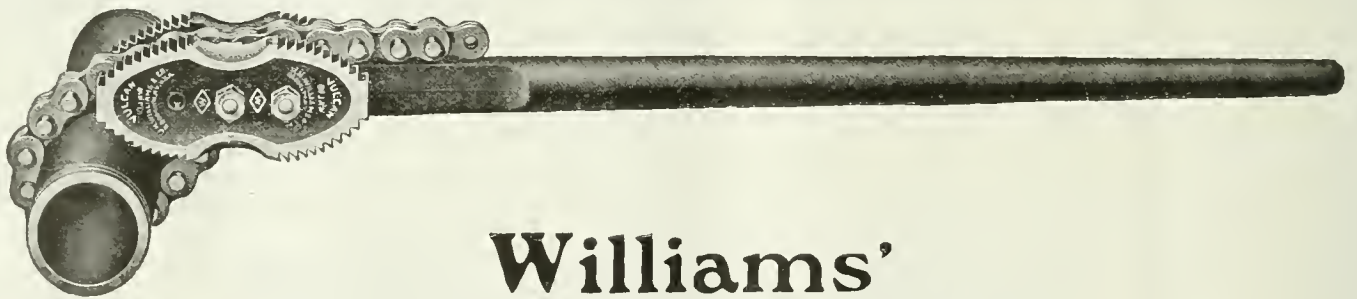
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THE GOLD STANDARD AND THE NEED OF GOLD.—III.

Points from the Report of the American Committee on the Gold Situation.

RELATION OF CREDITS TO GOLD RESERVES.

It is hardly necessary to point out what happens when a national currency ceases to have a recognised value. Russia at the present time offers a spectacular example. The paper rouble, normally 51·2 cents, when no longer exchangeable for gold, depreciated to below 8 cents, and quantities of the so-called Kerensky roubles were sold at 2 cents. Russian bonds likewise fell to a small percentage on their normal value. Mexico's currency depreciated until 350 to 400 pesos were required in American gold. There is no comparison between conditions which existed or are existing in Mexico and Russia with conditions in the United States and allied countries. However, the situation which brought about the depreciation and practically the repudiation of Mexican and Russian currency was the issuance of great amounts of paper money without sufficient gold to cover them by these Governments; this emphasises the necessity of maintaining an adequate reserve in the United States. The following extract from the Monthly Bulletin of the National City Bank of New York for October, 1918, is a clear statement of the situation:

"While the war goes on credit will be artificially elastic in order that the necessities of the Government may be met, and the risk of credit expansion is minimised, as stated above, by the fact that Government credit is so largely behind the situation; but when the war ends this reduction in the output of gold is bound to make itself felt in the credit situation. The normal additions to banking reserves will not be made, and credits will be correspondingly restricted, with the result that prices will decline. The influence is the reverse of that which has been seen from rapidly increasing bank reserves."

The amount of bank credit available before the war was related to the bank reserves, and the level of prices the world over was adjusted to this relationship. It is possible, temporarily, by the use of Government credit, to sustain a higher level of prices without a corresponding increase of gold reserves, but this cannot be done permanently. The circulating credit must be freely convertible into the standard value if prices are to have any definite relation to the standard, or if prices in different countries are to have any definite relation to each other." In an article on "The Abuse and Use of Credit," published in the November, 1918, issue of *System*, the Hon. W. P. G. Harding, Governor of the Federal Reserve Board, makes this statement: "The supply of banking credit is not unlimited, and this credit, to remain sound, must be founded upon an adequate gold reserve. Should we abandon this basic principle we should invite financial disaster in the future. The nation is spending nearly two billions a month for war; that is largely a credit operation. In addition, a very large amount of credit is required for those industries without which the civil population cannot function. With such heavy demands it has become necessary to conserve credit in order that financial soundness may be preserved. Too free use of credit will affect us in at least these four ways: (1) It will make credit for war purposes more difficult to obtain and consequently higher in price. (2) It will tend to force prices to greater heights, because civilian business will then be able to compete with the Government and they will bid against each other. This will increase the cost of living and also the cost of the war. (3) It will impair the strength of our gold reserve, which must be maintained, as we are to remain upon a gold basis. (4) Our gold will be one of our strongest assets after the war, and any course which now affects that reserve will hamper us in getting back to a normal peace basis."

TRADE BALANCES.

It is of great interest to study the changes that have occurred in our foreign trade relations. In 1913 our exports were about \$2,465,884,000 and imports \$1,813,008,000.

These increased in 1917 to \$6,290,000,000 and \$2,659,000,000 respectively. We have been accustomed to have a mercantile balance in our favour and we want to increase our exports. This is a matter that has a direct bearing upon our gold reserves and the gold standard. The following excerpt from an address on our foreign relations by John D. Rovonsky, Vice-President of the National Bank of Commerce, New York, at the American Institute of Banking, Denver, September 19, 1918, is of special interest in this regard: "At the present time our international financial position is about as follows: Prior to the outbreak of the war, there were held abroad in the form of stocks, bonds and other securities, about four billion dollars. In addition foreigners resident abroad owned property in the United States worth about one billion dollars; in other words, the amount of foreign capital invested in this country at that time was, roughly, about five billion dollars. Since the outbreak of the war the net imports of gold amount to about one billion dollars. This makes a total on the debit side of our balance sheet of about six billion dollars. On the other side of the sheet we find the following: American citizens owned foreign securities and other property worth about one and a half billion dollars. During the war, up to July 1, 1918, we exported more than we imported merchandise to the extent of about ten billion dollars. We exported more than we imported silver during the same period to the amount of about 200 million dollars. From this it will be seen that we are to-day a creditor nation to the extent of over 5½ billion dollars."

"Table showing change in the international financial situation of the United States since the outbreak of the war"

(In millions of dollars.)

	Dr.	Cr.
United States securities held abroad at beginning of the war	\$4,000	—
United States property owned by non-resident foreigners	1,000	—
Excess of gold imports over exports, July 1, 1914—July 1, 1918	1,040	—
Foreign securities and other property owned by American citizens at beginning of war	—	\$1,500
Excess of merchandise exports over imports, July 1, 1914—July 1, 1918	—	10,110
Excess of silver exports over imports, July 1, 1914—July 1, 1918	—	195
Using this estimate as a basis, we are now a creditor nation to the extent of	5,765	—
	\$11,805	\$11,805

"The merchandise trade balance plus the silver export balance amounted to a little over ten billion dollars. In return for this we received gold to the extent of about one billion dollars; we had returned to us about two billion dollars of our own securities that had been held abroad, and we arranged to loan our Allies and other foreign countries about 7½ billion dollars. This makes a total of 10½ billion dollars. The difference between this figure and the export balances mentioned above amounts to a quarter-billion dollars. This amount is probably represented by loans that have been made to Allies and others and have not yet been used, increase in cash balances of foreign banks in the United States, merchandise paid for and not yet exported, etc."

Notices of appointments vacant on the mines are inserted free in the advertisement columns of this journal.

Witwatersrand Agricultural Society.

ANNUAL EASTER Show & Exhibition

**MILNER PARK, JOHANNESBURG,
16th to 21st APRIL, 1919**

THE SHOW will comprise Exhibits of
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POULTRY, FARM & DAIRY PRODUCE,
AND HOME INDUSTRIES.**

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DEMONSTRATIONS.

DEMONSTRATIONS OF CONCRETE PIPE
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WELDING, FRUIT CANNING, Etc.

LECTURES BY GOVERNMENT AND OTHER
EXPERTS.

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MANY OTHER NEW FEATURES NOT HITHERTO
SEEN AT RAND SHOWS.

**ANNUAL SALE OF THOROUGHbred YEARLINGS
AND PEDIGREE CATTLE, SHEEP AND PIGS.**

Entries for all Sections close 24th March, 1919.

Copies of Prize Lists and all particulars from the undersigned

Box 4344,
Johannesburg.

J. G. TORRANCE,
Secretary.

MINING MEN AND MATTERS.

Dr. Boering has returned to the Rand after a trip to America.

* * * *

Mr. J. E. McGuire and Mr. A. W. Stockett are on the staff of the U.S. War Minerals Investigation Committee, the former in charge of the investigation into chrome and tungsten and the latter in charge of potash resources.

* * * *

Cable advice has been received that Mr. H. C. Porter, for many years the Secretary of the Consolidated Gold Fields of South Africa, Ltd., has been appointed a director of that company, and that Messrs. H. G. Sidgreaves and J. Bradshaw have been appointed acting joint secretaries.

* * * *

Mr. W. Raeburn Snow, South African manager for Messrs. Samuel Osborn & Co., Ltd., Sheffield steel manufacturers, has secured a passage in the "Briton," and left Johannesburg on Wednesday night by the Cape express in order to catch the boat for England, which he is visiting on a business trip.

INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- April 12.—Crown Diamond Mining and Exploration Co., Ltd.—Ninth Ordinary General Meeting, at 11.30 a.m.
- April 17.—Apex Mines, Ltd.—Twenty-second Ordinary General, Board Room, Fourth Floor, National Bank Buildings, at 11 a.m.
- April 22.—Princess Estates, at 3 p.m.
- April 23.—Modder Deep Levels, at 10 a.m.
- April 23.—Geduld Deep, at 3 p.m.
- May 23.—West Springs, Ltd.—Second Ordinary General Meeting, at 10.30 a.m.
- May 23.—Daggafontein Mines, Ltd.—Fourth Ordinary General Meeting, at 11 a.m.
- May 23.—Springs Mines, Ltd.—Tenth Ordinary General Meeting, at 12 o'clock.
- May 23.—Brakpan Mines, Ltd.—Sixteenth Ordinary General Meeting, at 2.30 p.m.
- May 23.—Rand Selection Corporation, Ltd.—Twenty-seventh Ordinary General Meeting, at 3.30 p.m.
- May 23.—New Era Consolidated, Ltd.—Seventh Ordinary General Meeting, at 4.30 p.m.
- May 27.—New Primrose G.M. Co., Ltd.—Annual Ordinary General Meeting, at 12 o'clock.
- May 27.—New State Areas, Ltd.—Second Ordinary General Meeting, at 12.30 p.m.
- May 27.—New Unified Main Reef G.M. Co., Ltd.—Twenty-first Ordinary General Meeting, at 12.15 p.m.
- May 27.—Ginsberg G.M. Co., Ltd.—Twenty-fourth Ordinary General Meeting, at 11.30 a.m.
- May 27.—Glencairn Main Reef G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 11.45 a.m.
- May 28.—Consolidated Langlaagte Mines, Ltd.—Sixteenth Ordinary General Meeting, at 10.40 a.m.
- May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.—Ninth Ordinary General Meeting at 3.30 p.m.
- May 28.—Langlaagte Estate and G.M. Co., Ltd.—Twenty-eighth Ordinary General Meeting, at 12 o'clock.
- May 28.—Randfontein Estates G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 2.45 p.m.
- May 28.—Van Ryn Deep, Ltd.—Fourteenth Ordinary General Meeting, at 3.10 p.m.
- May 28.—Witwatersrand G.M. Co., Ltd.—Annual Ordinary General Meeting, at 11.30 a.m.
- May 30.—East Rand Proprietary Mines.—Twenty third Ordinary General, Board Room, Corner House, at 11 a.m.
- June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
- June 24.—Geldenhuis Deep.—Twenty-fourth Ordinary General Meeting, at 11 a.m.

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THE WEEK IN THE SHAREMARKET.

Promising Beginning—Strike Spoils Everything—Boom in Crown Diamonds Arrested.

At the opening on Saturday attention was again concentrated on Crown Diamonds, which opened at 25s. 9d., as against the overnight's price of 24s. 6d., and finished at 27s. 9d. Makganyenes made 68s. and Sakalavas, which reached 17s. 6d. the day previous and then fell to 10s., closing at 11s. 6d., were done at 12s. to 11s. The call, which included the unusual number of 34 sales, was with few exceptions a series of ticky to sixpenny reductions on the best stocks, the exceptions being City Deeps, Modder Easts, Pretoria Cements, Randfonteins and Roberts Victors. A regular rush and a howl greeted Crown Diamonds, and after much shouting they made 28s. 3d., finishing at 28s. After the call there was another upward move which carried them to 29s. 6d., but whether profit-taking began or the tram strike affected things, there was a speedy drop to 24s. 6d. and later to 23s. 6d. The main market weakened, and judging by the price of 90s. sellers for Government Areas it looks as if good securities were being sold for the sake of speculative goods. Roberts Victors advanced to 19s. buyers. The fall in prices continued till the close. Monday's opening brought considerable dealing in Crown Diamonds at from 22s. 9d. to 23s. 9d. and sales of Springs at 55s. and 54s. 6d. and Government Areas at 89s. The call showed one long list of falls with the two exceptions of S.A. Breweries and Van Dyks. Bad as the prices look as compared with Saturday's official record, they were no worse than the closing rates of that day. In the course of the morning Crown Diamonds recovered to 25s. 9d., but fell back once more to 23s. 6d. The only sales at the opening on Tuesday were Crown Diamonds at 23s. 9d. and 24s. and Government Areas at 89s. and 89s. 3d. The call was limited to actual dealings in eleven stocks. Though business was restricted and there was no inclination to buy, there was also none to sell. With the exception of Hume Pipes and Van Ryn Deeps, which were the turn lower, most of the stocks quoted, unless unchanged, were from 3d. to 6d. higher. Wednesday's opening business was limited to sales of Crown Diamonds from 24s. 3d. to 23s. 9d. Koodoos were bid to 22s., with a seller at 24s. The best offer for Makganyenes was 50s. The call showed a general decline in prices, the only important stock which advanced being Van Ryn Deep. During the day Springs weakened, closing at 52s. 6d. At the opening on Thursday Springs were sold at 52s. 6d. and 52s., and Crown Diamonds at 22s. At the call something went decidedly wrong with Springs. After a commencing sale at 57s. 6d. they dropped by easy stages to 50s. 3d., closing 3d. better. The rest of the market offered no feature of interest or any special change. The outside dealings for the week comprised:—Sales: Makganyenes, 72s. 6d. to 50s., closing 57s. 6d. to 62s. 6d.; Henderson's Options, 1s.; Sakalavas, 12s. to 9s.; Monteleos, 15s., with sellers at 14s.; South-Westerns, 70s. to 75s. Buyers and sellers: Koodoos, 20s. to 23s. buyers; Vendors, 18s. to 21s. buyers, with sellers of both stocks 1s. nominally above the highest figures; Compounds, 3s., 3s. 6d.; New Farms, 1s. 8d. buyer; Lydenburg Lands, 2s., 2s. 3d.

	Fri., 28th.	Sat., 29th.	Mon., 31st.	Tues., 1st.	Wed., 2nd.	Thurs., 3rd.
African Farms	14 0*	14 0	13 6*	13 9	13 0*	13 3*
Anglo-American Corp.	24 0*	27 6+	—	22 6*	23 0*	—
Apex Mines	7 3*	7 3*	—	7 3*	7 3*	7 0*
Bantjes Cons.	2 0*	2 1	2 0	1 11*	1 11*	2 0
Brakpan Mines	67 0*	—	68 6+	62 0*	62 0*	62 0*
Brick and Potteries	4 6*	—	4 0*	4 0*	—	—
Bushveld Tins	0 10+	0 8*	0 7*	0 8*	0 8*	0 10*
Cinderella Cons.	—	—	—	—	3 3*	3 9*
City and Suburbans	—	6 2	6 0*	5 9*	—	—
City Deeps	52 0*	53 0	52 0	51 6*	57 6*	51 0*
Clydesdale Collieries	22 6*	22 6*	22 0*	22 6*	22 0*	22 0*
Cons. Investment	24 0*	—	—	—	—	20 0*
Cons. Langlaagtes	17 6+	17 6+	17 0*	17 6+	17 0+	16 6*
Cons. Main Reefs	10 4½	10 0*	—	—	10 0+	9 9*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 28th.	Sat., 29th.	Mon., 31st.	Tues., 1st.	Wed., 2nd.	Thurs., 3rd.
Cons. Mines Selection	24 6*	24 9+	24 9+	24 6+	—	—
Coronation Freeholds	—	—	1 1*	1 1	1 1*	1 1
Coronation Syndicates	1 1	—	2 0+	—	—	—
Crown Diamond	22 0	28 6	24 0	24 6	23 3	22 3
Daggafonteins	22 6*	22 9	22 3*	22 3	21 9*	21 0
Durban Road Deeps	—	8 0*	8 0*	8 0*	8 0*	—
East Rand Coals	2 1	2 1*	2 1	2 3	2 1	2 1
East Rand Deeps	0 9*	0 9*	0 9*	0 10*	0 11	—
East Rand Minings	16 9*	17 6+	17 0+	17 6+	17 0	17 6+
East Rand Props.	5 10	5 9*	5 0*	—	—	5 3*
Eastern Gold Mines	1 3*	1 3*	1 3*	1 3*	1 3*	1 1
Frank Smith Diamonds	3 10*	4 0	3 10	4 0	4 0	4 1
Geduld Props.	44 3	44 0	43 0	43 6	43 0*	43 0*
Ginsbergs	—	—	1 0+	3 0+	—	—
Glencairns	—	—	—	1 0*	—	1 0*
Glencoe Collieries	—	—	—	—	6 0	6 0*
Glynn's Lydenburgs	21 6*	21 6*	—	21 6*	—	—
Government Areas	91 6	91 0	89 6	89 0	89 0	89 6
Jhb. Board of Executors	30 0*	—	30 0*	30 0*	30 0*	30 0*
Klerksdorp Props.	1 1*	—	—	—	—	—
Knight Centrals	7 1*	7 2	6 6	6 5	6 7*	6 7
Lace Props.	20 9	21 0	20 6	20 6*	20 6*	—
Leeuwpoot Tins	25 0	24 6*	24 0	23 6*	23 0*	23 0*
Luipaardsvlei Estates	—	2 0	2 0+	2 0+	—	—
Lydenburg Farms	8 6*	8 6	8 4	8 4*	8 3*	8 3*
Meyer and Charltons	84 0*	84 0*	—	83 0	—	84 0*
Middelvlei Estates	1 0*	—	—	—	1 0*	1 0*
Modder B's	159 0	157 6	153 0*	153 0	152 0	150 0*
Modder Deeps	146 6	145 0	144 0	143 0*	142 6	142 6
Modder Easts	18 7½	19 3	18 10½	19 0*	18 10½	18 9
Do. Options (3 years)	3 0	3 3*	3 7+	3 3*	—	3 2
Do. Options (4 years)	4 0*	4 6	4 0*	4 6	4 6	4 0*
Hume Pipes	34 0	33 6	33 0	32 0*	34 0+	30 0*
Natal Navigation Colls.	—	—	21 0*	21 0*	21 0*	21 0*
National Banks	£15+	£15+	£15+	£15+	£15+	£15
New Boksburghs	1 0*	—	1 0*	1 0*	1 0*	1 0*
New Eland Diamond	25 0*	27 0*	26 0*	25 0*	25 6*	26 0
New Era Cons.	9 9*	9 9	9 6*	9 6*	9 6	9 6*
New Geduld Deeps	6 0*	6 3+	5 9*	5 10*	5 10*	6 0+
New Heriots	—	—	10 0+	—	9 0+	—
New Kleinfonteins	12 0	12 0	11 6	11 6	11 6	11 3*
New Modders	—	£25½*	£25½*	£25½*	£25½	£25½
New Unifeds	—	—	—	—	5 0+	4 0+
Nigels	5 6*	5 9*	5 6*	5 9*	5 6*	—
Nourse Mines	—	14 0	—	14 0+	12 9*	14 0+
Pretoria Cements	65 0*	66 0*	66 6*	—	—	62 6*
Princess Estates	3 1*	3 1	2 9	2 10*	2 9	2 9
Rand Mines	—	—	—	—	—	60 0+
Rand Nucleus	1 9*	1 10*	1 10*	1 10*	1 9*	1 9*
Rand Selections	77 6*	77 6*	75 0*	76 0*	75 0*	—
Randfontein Deeps	—	4 0*	3 9*	4 0*	4 3*	4 3*
Randfontein Estates	15 0	15 3	15 3	14 9*	14 9*	14 9*
Roberts Victors	17 6	18 6	17 0	—	15 6*	—
Rooibergs	7 3	7 2	6 0*	6 6*	6 3*	6 3
Roodepoort Uniteds	—	—	—	2 0*	2 0*	—
Ryan Nigels	—	3 0*	—	3 3*	—	3 3*
Shebas	1 0*	1 3*	1 4*	1 3*	1 3*	—
Simmer Deeps	1 6*	1 6*	1 6*	1 6*	—	1 6
S.A. Breweries	—	27 6*	31 0*	—	—	—
S.A. Lands	—	6 6	6 3	6 0*	5 10*	6 0*
Springs Mines	56 0	55 9	54 9	54 6*	54 0*	50 6
Sub Nigels	21 6*	21 3	20 6*	20 9*	20 9*	21 1½
Swaziland Tins	—	—	—	—	—	20 0+
Transvaal Lands	22 0*	22 0*	21 0*	21 0*	23 0+	23 0+
Transvaal G.M. Estates	13 9*	14 3*	14 0	14 3*	13 9*	—
Van Ryn Deeps	67 9+	66 9	66 6	65 9*	66 6	67 0+
Village Deeps	17 6+	—	16 0*	16 0	16 0*	16 0*
Village Main Reefs	—	10 0+	—	—	—	10 0+
Welgedachts	24 0+	—	—	—	—	—
Witbank Collieries	55 0*	—	—	—	—	—
Western Rand Estates	1 4*	1 3*	—	1 3*	—	1 6*
Witwatersrands	—	—	—	—	17 6*	20 0+
Wit. Deeps	15 3	15 3	14 9*	15 0	14 3*	14 0*
Wolluters	2 10*	3 0+	—	3 0+	—	3 0+
Zaaiplaats Tins	12 3*	12 3	11 9+	12 0*	12 0	11 10*
Union 5 per cents.	—	£103½+	—	£102¾*	£103½	£103
New State Areas	22 3*	22 6	22 3	22 6	22 0*	22 0*
Southern Van Ryns	9 0*	9 0*	8 9*	8 9*	8 9	8 9
S.A. Alkalis	30 0+	31 0+	30 0+	31 0+	31 0+	30 0+
Tweefontein	22 9*	22 6*	22 6*	22 6*	22 9*	22 9*
West Springs	22 7½	22 6	22 0	21 9*	21 3*	21 6
Do. Options	—	8 0*	—	—	—	—
New Jagersfonteins	—	—	100 0*	—	—	—
Van Dyks	—	—	—	—	—	3 3

*Buyers. †Sellers. ‡Odd lots. §Ex London.

THE MINERAL INDUSTRY OF SOUTH AFRICA AND ITS FUTURE.*—VII.

[By P. A. WAGNER, B.Sc., Ing.D.]

FUTURE DISCOVERIES.

The future of the mineral industry of South Africa, in so far as it is dependent on deposits actually known or worked at the present time, has already been discussed at some length in the foregoing review. It remains to consider what prospects the country offers in the matter of fresh discoveries. In dealing with this interesting subject, it will be useful to divide the Union into a number of mineral provinces—that is, natural divisions, which by virtue of the geological or physiographical conditions prevailing within them yield, or may be expected to yield, certain minerals. Those having even a passing acquaintance of the geological features of the Union will realise that this scheme, if rigorously carried out, would involve the discrimination of a large number of areas, many of which, in addition to being quite unimportant, could, owing to their small size, not be shown on the accompanying map. For this and other reasons it is proposed to adopt the following nine-fold division, though it in nearly every instance involves the inclusion in the individual provinces of rocks of different geological age or of widely separated areas of the same formation:—(1) The Witwatersrand-Ventersdorp Province; (2) The Karroo Province; (3) The Transvaal System Provinces; (4) The Bushveld Province; (5) The Old Granite-Swaziland System Provinces; (6) The Copper Region of Little Namaqualand; (7) The West Coast Province; (8) The Cape System Province; (9) The Kalahari Region. The boundaries of the provinces, except where actually determined by geological boundary lines, are largely arbitrary.

THE WITWATERSRAND-VENTERSDORP PROVINCE.

The Witwatersrand-Ventersdorp Province embraces a considerable extent of country in the Southern Transvaal and adjacent territories occupied or underlain at comparatively shallow depth by the rocks of the Witwatersrand and Ventersdorp systems, which for the purposes of the present address have been grouped together. It includes a fairly considerable area of Karroo rocks to the east and south-east of Boksburg, narrow strips of dolomite to the west of Randfontein and to the south-east of Klerksdorp, and has also for convenience been made to embrace the area of older granite to the north of Johannesburg, and several areas of older granite and Karroo rocks in the South-Western Transvaal. Including as it does the greatest gold-field and the two greatest alluvial diamond fields in the world, this is easily the most important of the nine divisions, contributing about 80 per cent. by value of the total mineral output of the Union. In addition to gold and diamonds, it yields silver, coal, asbestos, building-stone, quartz, tale, and a considerable variety of clays. As regards future discoveries, the possibility of locating further outcrops of the Main Reef, or areas underlain by it, will doubtless continue to act as a powerful incentive to prospecting and boring within the tract of country over which the Witwatersrand beds are known to extend.¶ On the whole it does not appear likely that the productive area of the Rand gold-field will be very materially added to, either to towards the east, south-east, or west. It is possible however, that some of the work now being carried out in the Heidelberg area may bear fruit, and that the faulted continuation of the Main Reef zone will eventually be located beneath the dolomite to the south-west of the Randfontein group of mines. There is also a remote possibility that a "Farther" East Rand may await discovery below the coal-measures of the Bethal and Middelburg districts, but this systematic deep-boring alone can

decide. In regard to the Venterskroon and Klerksdorp gold-fields, the outlook is not very hopeful. The prospecting and boring operations carried out in the former area some years ago, under the direction of Dr. Corstorphine, render it practically certain that the Main Reef zone does not exist in the Witwatersrand beds as developed within it. In so far as the Klerksdorp district is concerned, it still remains to be proved whether or not the Main Reef zone is represented, and, until the complex geological structure of the area has been more completely unravelled, it will hardly be possible to do this. Some geologists have identified Buffel-doon Reef, until recently worked by the Quest Gold Mining Company, with the Main Reef, but the correlation rests on rather a slender basis. In any case, the disappointing results obtained from the exploitation of this "reef" indicate that, if it is the Main Reef, the latter is very thin and patchy in the Klerksdorp district.

Coal.—Fairly considerable quantities of coal are produced from the coal-measures overlying the Witwatersrand beds and dolomite on the Far East Rand, but the generally superior quality of the coal found farther east, combined with the improved railway facilities, have tended of recent years to diminish the amount of coal mined in the area. There is little probability of any important coal-bearing areas, other than those known at present, being located within the province.

Diamonds.—The whole of the Witwatersrand-Ventersdorp Province falls within the diamond belt previously defined, and it is not unlikely, therefore, that important pipes and dykes of diamondiferous kimberlite await discovery within it.

(To be continued.)

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* Being Presidential Address read before the S.A. Association for the Advancement of Science.

¶ The most easterly exposure of undoubted Main Reef zone hitherto located is on, or more correctly speaking, beneath the farm Droogfontein No. 447, on the Far East Rand; the most westerly, in the south-western corner of the claim-holdig of the South Randfontein Deep, on the West Rand; and the most southerly, on the farm Platkopje, No. 63, 16 miles south-west of Heidelberg.

ENGINEERING SECTION.

THE KALAHARI LAKE SCHEME.—III.

[By PROFESSOR E. H. L. SCHWARZ, Rhodes University College, Grahamstown.]

ECONOMIC CONSIDERATIONS.

The actual immediate results of damming up the Cunene at the cataracts and turning the water into the Etosha Pan will be purely for the benefit of the natives of Ovamboland; their country will be rewatered as of old, and it will accommodate the natural increase for an indefinite time. I assume that it is a wise policy to help an industrious, virile nation like the Ovambos, if only from the fact that they constitute a valuable supply of native labour. The country is against White settlement and the Ovambos are perfectly happy if left to themselves as they now are. If nothing is done along the lines I have suggested, Ovamboland will dry up and then where shall we find room to settle 100,000 natives with a very definite claim to be allowed to win their daily bread? In 1915-16 there was a famine and in spite of all the Government could do, thousands died. Hundred-struggled along the road to Tsumeb in search of work and food and perished by the way; all over the flats one still sees their skeletons and even close to Tsumeb one sees the white skulls in the bush. The conditions that bring about famines are increasing. Although, therefore, there are no settlement schemes connected with the western portion of the Kalahari scheme, there are other benefits to be derived from it. The South-West Protectorate is bordered on the east by the Kalahari; on the north by the Etosha Pan and waterless flats surrounding it; and on the west by the sea chilled by the Benguella Current, and the coast strip of the most hopeless desert of shifting sand-dunes, the Namib. On the south, Namaqualand presented an equally dreary prospect. Where can a country so situated procure an adequate supply of atmospheric moisture to satisfy its wants? As it is, a large portion of the Protectorate is little better than an ash-heap during most of the year. If we want this great country, bigger than the Cape Province, bordering the Union, to be occupied with a good class of settlers, we must give them reasonable conditions of life. If the Etosha Pan is filled up something in that direction will be done. To put it concretely: the air over the sea may be supposed to be saturated with moisture and because of the Benguella Current its temperature is below that of the land, let us say, 40 degrees Fahrenheit. When the air from the sea is blown over the land, whose temperature is, say, 60 degrees, it becomes warmed and so far from yielding moisture in the form of rain to the land, the cold air, now warmed, asks for more moisture to satisfy itself. It, on the other hand, the air over the water in the Etosha Pan, at a temperature of, say, 80 degrees, were to be blown over the land in the Protectorate at a temperature of 60 degrees; the warm air, now cooled, would be unable to hold so much moisture, and rain would fall. That, somewhat crudely put, is the effect that filling up the Etosha Pan will have on the Protectorate. At present we do not know what there is in the centre of the Etosha; two expeditions have started to cross the main pan, but they have never been heard of since, the explanation being, it is supposed, that in the middle there is boggy ground and that the crust of hard clay over it must have suddenly given way, engulfing the whole caravan, men, oxen and wagon. At any rate, there is no free water and the surface acts as a heater, drying the air.

THE SITE OF THE CUNENE WEIR.

As far as I can gather there are two methods of turning the Cunene into its old flood-channels: one being a more or less temporary arrangement of piles driven into the bed of the river, with branches and rubble filled in between; the

other is of building a masonry dam. The first method, if adopted, would necessarily have to be applied to the river a considerable distance above the cataracts and the advantages claimed for it are that it would be cheaper than the other method and in addition, by taking out the water so high up, it would enable the scheme to provide the Portuguese with an irrigation canal in their own country and so, in a way, compensate them; further, should an exceptionally high flood occur, the weir would be washed away and less damage would be done to the surrounding country than if all the water were to be turned into the plain. As for compensation, I think a more satisfactory arrangement could be arrived at with the Portuguese, who, of course, have to be consulted and who have every right to the greatest consideration; a question like this should not be allowed to interfere with the scheme being carried out in the way most advantageous for all parties. In regard to the disastrous flooding of the country, were a masonry dam to be built, spillways would naturally be provided and they would be so constructed that the water of an excessive flood would be carried away. As a matter of fact, however, the gradient of the Cunene River is so exceedingly small that if the weir were to be constructed at one of the cataracts, the water would be banked up for scores of miles above and all the outlets would receive flood water. The natural site for the masonry dam is some six or seven miles below the small cataracts, where the river runs through a rocky gorge. The maximum height of the flood-level, indicated by dirt lines on the rocks, is forty feet; in other words, the river has risen at some time forty feet above its dry season level and no more, any water over and above that required to fill the river up to forty feet has been discharged into the spillways. The river is wearing away the cataracts so rapidly that at the time when the flood reached forty feet, the bottom was higher than at present. There may be sites suitable for the dam at the small cataracts, where the wall would not have to be so high, but there would be trouble with the sides here. If one went down as far as the Cambele and Rua Cana cataracts, one would be too far below the level of the Ovamboland plain for a dam to be of any use. I may explain that when the Germans drew up their agreement with the Portuguese about the border, a line was drawn due east from the "cataracts"; the Portuguese claim that the Rua Cana, or Great, Cataract was meant, but the Germans got to hear of the smaller cataracts and claimed all the country up to a line drawn east from these, thus gaining six miles of territory all along the border. The matter is still open and the six miles in dispute is regarded as neutral territory and is administered by a Portuguese and an English resident conjointly.

A great deal has been made of the loss of riparian rights to the people living in the country below the proposed weir on the Cunene, and some have gone so far as to state that the question of compensating these would involve so much expense that the scheme would be ruled out on that ground alone. The answer to that is that there are no people living below the cataract right away to the sea, nor are there ever likely to be. If for argument's sake it were conceded that some mad people might be moved to take up their habitation in this terrible country, there are sufficient tributaries flowing in from the Kaokoveld and from the hills on the Angola side to make the loss of water unnoticeable. I was privileged to read Major C. N. Manning's report on his expedition into the Kaokoveld, which is the only description of this part of the world extant, since the German map is

so inaccurate here as to show that no one had actually been along the Cunene in these regions. The only harm the weir can do is to enable freebooters to skip across the border more easily, but as they do so under present circumstances, no very great mischief can accrue.

In regard to the channels that would take the water to the Etosha Pan, no very great work will have to be done with them. They have naturally become sanded up since the normal flow has been stopped, but when this is restored, they will clear themselves. No artificial dredging should be resorted to, since the whole ground water of the lower Ovamboland plain has to be restored; it will take two or three years' floods to make good what has been lost since the time of the original diversion and only when the water table has been restored will the floods reach the Etosha. The sand in the beds of the spill-ways will thus hold up the water for some time and will enable it to soak sideways into the land and bring the country back to normal fertility. It is very remarkable that with practically no drainage, there is no brack in the Ovamboland plain; no salts of any kind effloresce on the surface nor are there any salts in the Etosha Pan. The salt pans on the west of the pan have obtained their salt from the drainage from the hills on the west of the plain and in no way interfere with the general nature of the plain. I would emphasize this fact, as it has been stated that one result of my scheme would be to turn the whole of the north of the Protectorate into a salt morass. It is true that the peculiar nature of the ground allows the growth of only special plants adapted to the conditions; I do not think that the soil will ever be suitable for growing the ordinary farm crops, but the Mohonga grows freely, and as that is what the natives live on and do well on, I do not think we need worry. At any rate I have never considered this portion of the scheme as suitable for white settlement; it is required to strengthen the Kalahari part, where, as I shall show, there are unlimited areas suitable for settlement. The two halves cannot be considered apart, for, were the Kalahari portion to be alone carried out and the Ovamboland plain left to dry up, the rivers would diminish, the climate would become still more arid and life in the Kalahari would become insupportable. If the Ovamboland portion is completed, the rivers, the Cunene, the Okavango and the Zambesi will be reinforced at their sources, rain-laden clouds will blow from Ovamboland to the Kalahari and refresh the land where the irrigation canals cannot reach, and the whole Kalahari will become a reasonably habitable country. The Kalahari restored to fertility, the territories adjoining will be benefited, and so on, in ever-widening circles, till the whole of South Africa becomes a land where seasons can be depended upon to bring forth their appropriate harvests and the recurring droughts are forgotten.

RELATIVE HEIGHTS.

I have used for the purposes of the sketch map an excellent Portuguese map of Angola, published by the Commissao de Cartographia; on this map the height of Humbe is given as 1,070 metres and on the Okavango, just above the border, the height of Menongue is given as 1,050 metres. On the German Kriegskarte the height of the Etosha Pan is given as 1,050 metres, or 3,445 feet. I made the Etosha Pan by barometer reading based on Tsumeb as 1,064 metres, or 3,490 feet. The Union war map gives two heights for the Etosha Pan, 3,444 feet for the western half and 3,346 for the eastern. I should like to believe that my reading is the correct one, being intermediate between the Cunene and the Okavango levels, but there is too great an element of doubt in these barometric readings to allow one to be at all sure. I took hourly readings throughout my stay in Ovamboland and constructed curves from the results. I found that the barometer rose steadily till between 9 and 10 o'clock; then there was a steady fall till between 5 and 6 o'clock, after which the barometer rose again. The difference was more than one-tenth of an inch and was equivalent to a difference in elevation of 150 feet. That is to say, if one took the reading at 10 o'clock, the height might be, say, 3,500 feet; at five o'clock the same place would be 3,650 feet above sea-level. With the curves plotted, one

could allow for this difference, but it often happened that a thunderstorm came along and upset the barometer. At Tsintsabis, for instance, a storm came and the barometer showed a deep, level depression from half-past three in the afternoon till half-past seven, and the reading, if it were simply taken as the normal reading, would make Tsintsabis 200 feet above Namutoni, whereas the current in the river showed that there was scarcely any difference in level between the two places. This may possibly explain the difference in height given on the Union war map for different parts of the Etosha Pan; the pan is as level as a sheet of water all over and there is certainly not a difference of 98 feet between the two sides. In regard to the relative heights of the Cunene and the Okavango, the Portuguese heights show that the Okavango River is considerably below the Cunene, which is borne out by the fact that the Cunene still pours over into Ovamboland, whereas the Okavango has ceased to do so. Franz Seiner, in his account of a journey into the Omaheke, gives the height of the mouth of the Omatako River where it debouches into the Okavango just above Dirico, as 1,075 metres; Seiner was wrong to the extent of 21 metres in his height of Grootfontein, and his figures for the Omatako are possibly equally wrong. When I went into Ovamboland the rains had not started and I obtained fairly consistent results with the barometer, but on my return in the rainy season nothing seemed to agree; Namutoni, for instance, had apparently gone up 100 feet, and for six consecutive days the barometer recorded this difference as against the previous set of readings. Seiner's figures for further up the river must also be wrong; for instance, where the sidestream flows out of the main channel to Gasamas, Seiner has a height of 1,127, or 52 metres above the embouchure into the Okavango. Now the water of the Okavango could not bank up 52 metres, or 170 feet, yet I had the evidence of white people who had seen the Okavango water flowing into the Omatako; I had most definite Bushman evidence that the Ovambo flood of 1917 came by way of Gasamas; I myself saw the flood channel coming into the Ovambo River; and finally, there are the full grown fish that had come from the Okavango, which were caught at Tsintsabis when the flood subsided. As the country along the Ovambo is flat, sand country which absorbs the rain water, the flood cannot have come from local thunderstorms.

According to the Rev. Father Gotthardt, the Missionary at Andara, the level of the Okavango in flood is six feet above that of the channel of the Omatako; only in exceptionally high floods, therefore, can the water find its way now to the Ovambo. Father Gotthardt was at the junction of the Omatako and the Okavango in May, 1909, the time of the great flood in the Omatako basin; he writes: "I followed the Omatako River from a point, which on the German maps is marked as Numkaub (where the Gasamas oshana meets the Omatako, about 70 miles from the Okavango confluence) downwards to the Okavango. In that year almost the whole channel of the river was in flood, or more exactly, filled with water. A regular current could not be observed, the water at some points flowing back, at other points forwards, and at other points not flowing at all."

Such evidence appears to me to be of more value than that obtained from barometer or boiling-point thermometer, both of which are subject to atmospheric disturbances that are often of very local occurrence. My own impression of the Omaheke, or Gab, as the Bushmen call it, is that it is a level plain with a small fall towards the south-east, and that consequently that portion of the Omatako that lies in it, from Gasamas to the mouth, has no fall worth mentioning. It is impossible to travel in the Omaheke during the dry season, and as the rains only began when I was returning, I was unable to do much in the way of personal observation, but at Kamonde's Vley the barometer traversed exactly the same points as it had been doing at Ondongua; I believe I am right, therefore, in saying that there is not a foot height's difference between these places, the sand country between, the true Omaheke being about forty feet above them.



AN ISLAND IN THE OKAVANGO RIVER ABOVE ANDARA.
KASAMBA CATARACT, CUNENE RIVER.

I have to thank the Administrator of the South-West Protectorate, Mr. E. H. L. Gorges, for allowing me to go into Ovamboland, which is beyond the police zone and is rightly closed to white men; every facility was given me for travelling where I wished and the Military Magistrates and officers of the Military Constabulary gave me every assistance. It was, however, in Ovamboland that my principal work lay, and here the Resident Commissioner, Major C. N. Manning, together with Lieut. C. H. Hahn, not only saw to my welfare and arranged my transport, but placed at my disposal all the information that they had acquired in their travels.

THE OKAVANGO.

The Okavango is a perennial river flowing in a channel which it has cut deep in the Omaheke, or Ovamboland plain. The average width of the stream is from 150 to 250 yards, with a flood-plain bordering it of from one to three miles breadth and more. This flood-plain is limited everywhere by high banks, which Father Gotthardt, whose description I am following, states are from 150 to 250 feet high, but which I believe to be an over-estimate. Sometimes these heights come up to the banks of the river when the plain disappears. The banks of the river are of clay or rock, while the base of the heights is everywhere of limestone. Every year, in January or February, sometimes even in December, the water in the Okavango begins to rise. The highest point at Andara is reached ordinarily at the end of March or the beginning of April. Further down the river it is later. Streitwolf, in his book on the Caprivi Zipfel, states that the highest point of the floods is reached in the lower course of the river in July and August; the explanation of the peculiar time of the floods is that, above the Andara rapids the Okavango flows in a valley with a very slight fall, and the swollen waters have to fill all the wide flood-plains covered with forest and grass, before they can come down. There is another reason, also, that the great swamps below the Popa Falls are growing larger every year; these are from 20 to 35 miles broad, so that the flood-plains above the falls are trifling in comparison. Above the falls, the fall of the river is about one foot in the mile, or 1:5,000; in the region of the rapids, according to Father Gotthardt, 5 feet to the mile, or 1:1,000. The height of the Popa Falls is about ten feet. Below the falls, the river breaks up into a number of small channels, which are at first confined between the high walls of the extension of the Ovamboland plain, called here the Mabula Veld, on the north, and the Kung Veld, on the south. When, however, the river emerges on to the bed of the old Ngami Lake, a sort of delta is formed and the river splits up into several branches. The most southerly branch is called the Teoghe, or Tauehe; this is the branch along which the principal swamps are and is also the one that used to supply Lake Ngami. Dotted over the swamps are indescribably pretty islands, full of palms and other forms of tropical vegetation. Just on the border of the swamps, about forty miles from Lake Ngami, there is a large native village called Tsao; it is the capital of the Batawana people and there are also the quarters of the Resident Magistrate and a fairly large police-camp. On the river itself live the peculiar race of the

Makoba, who are virtually slaves to the Batawana. The once famous Lake Ngami is now a vast reed marsh, no large expanse of water being visible from the shores. The climate is extremely enervating in summer and the marshes are the source of malaria and blackwater fever. The opening up of the former channel to the Makarikari and its outlet to the south, will cause a sufficiently strong current in the Teoghe region to limit the flow to one definite channel and to do away with much of the marsh-land. Two central channels, the Siroe and the Poro, strike across the Ngami depression and join at the south-east side as the Tamalukan, or Thamalakane River. This last river used to lead down from the Chobe to Lake Ngami, and Chapman in 1853 saw reeds and rubbish has blocked the course and the Chobe flows only towards the Zambesi now. The Selinda channel takes the Okavango water into the Chobe lagoon. There is a good deal of discrepancy in the various accounts of this branch; Mr. H. V. Eason, who was there in 1908, writes that the Okavango water only comes down it once in ten years, but Mr. Percy Reid states that it is commonly used by natives as a water-way between the Chobe and the Ngami regions. At any rate, this is a leak, which, if we wish to fill up the Kakarikari, must be stopped, and it may be necessary to tackle it independently of the Chobe weir.

The Botletle or Zonga River joins the Tamalukan at right angles; it is a wide, cool stretch of water, flowing silently onward to its grave in the desert. The recent floods along the Okavango have caused it to run with sufficient force for its waters to reach the Makarikari as of old, leaving Lake Ngami on one side. The Kalahari sand is always blowing into the channel, and it is the chief object in increasing the volume of the Okavango, by throwing in the water of the Cunene, that the current should be enabled to overcome this obstruction; otherwise, if nature is left to herself, the Botletle will become sanded up and the whole of this area will become waterless.

(To be continued.)

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

BUSINESS on the Commercial Exchange was very disappointing at the beginning of this month, when extra enquiries have hitherto been expected. A buyer of standing was interviewed, and he explained that the heavy producing groups of mines are only requisitioning for absolute requirements of small items that run out from time to time through absorption. These mines are now deliberately using from their reserves, therefore the buyer referred to does not think there will be very much business from them for some months to come, and another reason is that so much material and stores have to come from Britain and America ordered any time during the past twelve months for the mines. A member of the Exchange states that the mine requirements are very poor indeed, and were it not for the outside mines as far away as the Belgian Congo, the Transvaal and Natal coalfields, the diamond mines, the Railways, Municipalities and other general consumers, things would be bad indeed, and they are quite bad enough because the position created by the building strike has perturbed the whole commercial community—even the drapers. One medium class firm, catering for the mines and building trade, has not had an order for three weeks, because of the strike and the uncertainty of everything. Another overhanging feature has been the likely happenings to the poorer grade mines. In this respect a member of the Chamber of Mines has been interviewed, and whilst he did not commit himself, he seemed thoroughly imbued with the idea that nothing will happen to these mines, always providing the labour position remains as it is.

ELECTRICAL GOODS.

No alterations during the week. Country business just about the same. Tubing still very scarce, price ruling at from 45s. to 50s. The general opinion seems to be that although there is a lot of work to be done there will be no great spurt until things settle down a bit, and that any increase will be very gradual.

SAFETY FIRST.

Projecting Set Screws, Clamps, etc., on revolving shafting is a constant danger to workmen and the cause of many accidents, which can be entirely prevented by installing

WARD'S PATENT SAFETY AND ADJUSTABLE COLLAR.

**Cam Shafts, Tub & Mill Shafts,
and Line Shafting a Speciality.**

**Agents : GEO. STOTT & CO., Ltd.,
Engineers, Johannesburg.**

AGRICULTURAL MACHINERY AND THE SHOW.

The agricultural machinery merchants are busily engaged in turbing their many and varied exhibits, some of which have already gone to the Showground. Messrs. G. North & Sons are showing a complete plant of the Deleo light, suitable for the farmer's homestead, hotels, houses, etc. The motive power comes from paraffin or petrol and an ordinary three-quarter kilowatt plant carries a sixty house-lamp power. The smaller motors of $\frac{1}{2}$ h.p. are used for cream separating, milking, sheep shearing, cutting chaff and roots, as well as mealie shelling and all the other farm requirements where power is required. The firm will have a slightly better show than last year, as some Canadian ploughs and agricultural implements have been received from their coast house. A speciality will be the farmers' pumping outfits, as well as an exhibition of ploughs, planters, cultivators, harrows, oil engines, windmills, chaff and root cutters, shellers, separators, ensilage cutters, etc.

EAST RAND PROPRIETARY MINES, LIMITED.

(Incorporated in the Transvaal.)

Notice to Shareholders.

NOTICE IS HEREBY GIVEN that the Twenty-third Ordinary General Meeting of Shareholders for the year ended 31st December, 1918, will be held in the Board Room, Second Floor, The Corner House, Johannesburg, on FRIDAY, the 30th MAY, 1919, at 11 a.m., for the following business:—

1. To receive and consider the Balance Sheet and Accounts for the year ended 31st December, 1918, and the Reports of the Directors and Auditors.
2. To elect Directors in the place of those retiring in accordance with the provisions of the Company's Articles of Association.
3. To determine the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
4. To transact any other business which ought to be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

The Share Transfer Books of the Company will be closed from the 24th May, 1919, to the 30th May, 1919, both days inclusive.

Holders of Share Warrants who desire to be present or represented at the Meeting shall produce their Share Warrants (or may at their option deposit same) at the places and within the times following:—

- (a) At the Head Office of the Company, in Johannesburg, at least 24 hours before the time appointed for the holding of the Meeting.
- (b) At the London Office of the Company, No. 4, London Wall Buildings, London, E.C. (2), at least forty days before the date appointed for the holding of the Meeting.
- (c) At the Office of the Crédit Mobilier Français, 30 and 32 Rue Taitbout, Paris, at least forty days before the date appointed for the holding of the Meeting.

and shall otherwise comply with the "Conditions as to the issue of Share Warrants" now in force.

Upon such production or deposit a Certificate, with Proxy Form, will be issued, under which such Share Warrant holders may attend the Meeting either in person or by proxy.

By Order of the Board,

RAND MINES, LIMITED.

Secretaries.

S. C. STELL, Secretary.

Head Office:

The Corner House,
Johannesburg, Transvaal,
12th February, 1919.

Companies Registered.

The Ermelo Agencies, Ltd., Joubert Street, Ermelo, capital £100.
 Carrim Sooliman, Ltd., King Edward Street, Potchefstroom; capital £1,000.
 Martin's, Ltd., Castle Mansions, corner of Eloff and Jeppe Streets, Johannesburg; capital £1,000.
 Acme Iron Founders, Ltd., 11-17 Trust Buildings, Fox Street, Johannesburg; capital £700.
 Eucalyptus, Ltd., 67 Human Street, Krugersdorp; capital £5,000.
 The Albion Cordial and Essence Manufacturing Company, Ltd., 16a Pritchard Street, Johannesburg; capital £2,000.
 Leong Ki, Ltd., 53a Kimberley Road, Lorentzville, Johannesburg; capital £1,000.
 Protex Paint Company, Ltd., 92 Albert Street, corner Polly Street, City and Suburban, Johannesburg; capital £1,000.
 R. B. Greer & Company, Ltd., Maxwell Buildings, Harrison Street, Johannesburg; capital £25,000.
 Rand Retreading and Vulcanising Company, Ltd., 126 Main Street, Johannesburg; capital £7,500.
 Heidelberg Financial Agency, Ltd., Standard Bank Buildings, Heidelberg, Old Standard Bank Buildings, 63 Commissioner Street, Johannesburg; capital £2,000.
 Cape Furnishing Company, Ltd., Jeppe Arcade, 110 Commissioner Street, Johannesburg; capital £5,000.
 Connecks (S.A.) Motor Company, Ltd., corner Marshall and Harrison Streets, Johannesburg; capital £50,000.
 Chee Kung Tong Trust, Ltd.
 Karbhai, Ltd., Potgieter Street, Potchefstroom; capital £3,000.
 Bean Brothers, Ltd., Standard Bank Buildings, Main Street, Pietersburg; capital £200.
 Bongaspoort Gold Mining Syndicate, Ltd., 10-11 London House, Loveday Street, Johannesburg; capital £25,000.
 The A.B.C. Garage, Ltd., 4 Vulcan Street, Kensington, Johannesburg; capital £100.
 South African General Electric Company, Ltd., First Floor, G.E. Buildings, corner Simmonds and Marshall Streets, Johannesburg; capital £80,000.
 The Turffontein Investment Company, Ltd., 141 Market Street, Johannesburg; capital £800.
 C.S. Cash Stores, Ltd., Old Standard Bank Buildings, 63 Commissioner Street, Johannesburg; capital £500.
 The Victoria Iron and Brass Foundry, Ltd., 78 Sauer's Buildings, Loveday Street, Johannesburg; capital £2,000.
 The H.S.K. Syndicate, Ltd., 32 African City Properties, Market Street, Johannesburg; capital £4,000.
 Ashkanazy, Ltd., Castle Mansions, 91a Eloff Street, Johannesburg; capital £5,000.
 Orion Diamond Mining Company, Ltd., 10-11 London House, Loveday Street, Johannesburg; capital £2,500.
 Leon's Agencies, Ltd., 11a Diagonal Street, Johannesburg; capital £500.
 Ho Kaum, Ltd., Waterfall Road, Newlands, Johannesburg; capital £300.
 Babasahib & Hussen, Ltd., 141 Market Street, Johannesburg; capital £800.
 Hassan Bapoe, Ltd., First Road, Greyhound, near Johannesburg; capital £100.

FOREIGN COMPANIES.

The South African Steam Navigation Company, Ltd., care Louis Charlton Goch, 90-94 Exploration Buildings, Commissioner Street, Johannesburg; capital £500,000.
 The South-West Diamonds, Ltd., care Louis Charlton Goch, 90-94 Exploration Buildings, Commissioner Street, Johannesburg; capital £250,000.
 Nigel Van Ryn Reefs, Ltd., care J. S. Richardson, 151, Stock Exchange Buildings, Johannesburg; capital £100,000.
 The East Asiatic Company, Ltd., care A. H. Meyer (sub-agency manager), The East Asiatic Company, Ltd., 81 Sacke's Buildings, corner Eloff and Commissioner Streets, Johannesburg; capital 70,000,000 francs.

ALTERATIONS AND ADDITIONS TO FOREIGN COMPANIES.

Henwood's Properties, Ltd., Johannesburg.
 Spitzkop Colliery, Ltd., Johannesburg.

CHANGE OF NAME.

The Maus Continuous Centrifugal Separator, Ltd., to Continuous Centrifugal Separators, Ltd.
 The South African Rubber Manufacturing and Tyre Company, Ltd., to The South African Rubber Manufacturing Company, Ltd.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

Rand Mining Timber Company, Ltd., Johannesburg; increase of capital.
 William Bain & Co. (S.A.), Ltd., Johannesburg; powers of directors.
 Lymol, Ltd., Johannesburg; increase of capital.
 Chicory, Ltd., Johannesburg; reduction of capital.
 Century Tin Mines, Ltd., Johannesburg; destruction of books.
 Jacobs, Sons & Co., Ltd., Johannesburg; alteration of articles.
 Wilson & Co., Ltd., Johannesburg; alteration of articles.
 Alexandra Township, Johannesburg; conversion into public company.
 Transvaal Mattress Co., Ltd., Johannesburg; alteration of articles.

NOTICES OF INCREASE AND DECREASE OF CAPITAL

The Corner and Estate Company, Ltd., Pretoria; decreased from £20,000 to £10,500.
 Ford & Rossouw Gold Mining Company, Ltd., Pretoria; increased from £5,000 to £10,000.
 Northern Trust Company, Ltd., Johannesburg; increased from £12,500 to £20,000.
 Premier Chicory Company, Ltd., Johannesburg; increased from £600 to £1,500.
 Rand Coal Agency, Ltd., Johannesburg; increased from £1,000 to £5,000.
 New Rondi, Ltd., Johannesburg; increased from £6,000 to £8,000.
 Marshall's Township Syndicate, Ltd., Johannesburg; decreased from £50,000 to £30,000.
 Macdonald, Adams & Co., Ltd., Johannesburg; decreased from £7,000 to £65,000.
 T. L. Garden Company, Ltd., Johannesburg; increased from £1,500 to £1,500.
 Alexandra Township Company, Ltd., Johannesburg; increased from £2,000 to £50,000.
 Transvaal Mattress Company, Ltd., Johannesburg; increased from £5,000 to £10,000.
 Lymol, Ltd., Johannesburg; increased from £5,100 to £7,500.

IN LIQUIDATION.

Ermelo Townlands Collieries, Ltd., Johannesburg; capital £52,500.
 Monks Garage, Ltd., Johannesburg; capital £1,000.
 Hajee Habibi, Ltd., Johannesburg; capital £7,000.
 Sunday Post, Ltd., Johannesburg; capital £20,000.
 Delagoa Bay Cigarette Company, Ltd., Johannesburg; capital £1,500.
 Livingstone Buildings, Ltd., Johannesburg; capital £27,000.
 South African Co-operative Egg Circle, Ltd., Johannesburg; capital £2,500.
 Rooiberg Extension Tin Mines, Ltd., Johannesburg; capital £25,000.
 South African Bonus Pencil and Novelty Company, Ltd., Johannesburg; capital £500.
 Union Wine and Spirit Company, Ltd., Johannesburg; capital £300.
 Pelucine Chemical Industries, Ltd., Johannesburg; capital £1,250.

CHANGE OF ADDRESS.

Debenhams (South Africa), Ltd., care Miss D. Penny, 4 Sutherland Avenue, Hospital Hill, Johannesburg.
 M. S. Sachs, Ltd., 18 Colonial Mutual Chambers, corner Fox and Loveday Streets, Johannesburg.
 Lala, Ltd., 29 Ferreira Street, Johannesburg.
 Khoja, Ltd., 1 Kort Street, Johannesburg.
 Khan & Tailors, Ltd., 25 Sacke's Buildings, Joubert Street, Johannesburg.
 Jassat, Ltd., 77 Grant Avenue, Norwood, Johannesburg.
 The Hind, Ltd., 219 Kruger Street, Louis Trichardt.
 Dolls, Ltd., 18-19 Colonial Mutual Buildings, corner Fox and Loveday Streets, Johannesburg.
 Wings, Ltd., St. Mary's Buildings, corner Eloff and Kerk Streets, Johannesburg.
 Bailem, Ltd., 4 Rocky Street, Johannesburg.
 Douglas Colliery, Ltd., Transvaal Goldfields Buildings, 6 Fraser Street, Johannesburg.
 Central African Finance & Development Company, Ltd., 7 Quin Street, Johannesburg.
 Municipal Magazine, Ltd., 11 Henwood's Arcade, Johannesburg.
 Lebombo Ranch, Ltd., 91 Market Street, Johannesburg.
 Bhat & Son, Ltd., Plain Street, Rustenburg.
 Bhat Brothers, Ltd., Plain Street, Rustenburg.
 Union Industries, Ltd., 6 National Mutual Buildings, Rissik Street, Johannesburg.
 Henley's (S.A.) Telegraph Works Company, Ltd., care J. H. Laurence, 19-21 Standard Bank Chambers, Johannesburg.
 "In the limelight" survives as a theatrical phrase, but it has

'Phone 4673.

Box 3162.

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The Week's Meetings.

CASSEL COAL COMPANY.

The 21st ordinary general meeting of shareholders in the Cassel Coal Company, Ltd., was held on March 25th, in the board room, Lace Building, Johannesburg. Mr. J. Dale Lace presided, and there were present Messrs. W. Ross, Julius Jeppe, L. Edwards, E. M. Hird, G. B. Pascoe, E. H. Lamb, D. O. Regan, W. Blackloch, Bailey, Southwell and Dr. McMullen, representing in all 99,385 shares of a capitalisation of £200,000.

I have to propose the adoption of the directors' report, balance sheet, and profit and loss accounts for the year ended 31st December, 1918. Before doing so, I shall remark on several matters of interest to the company which have transpired since we met in general meeting on the 26th March, 1918. The one great event which transcends all else in importance is the termination of the stupendous war. That has ended, but we are very far from normal peace conditions, and it is to be feared that we shall remain so for a very long time to come. That was to be expected, but we have at least the consolation of knowing that we are now free to direct our efforts to a restoration of the business and social fabric, and we hope that we shall be successful in achieving that result.

Actual war conditions, as you know, appertained until November last, and, naturally, no material improvement can as yet be reflected in our accounts. It has, for example, been impossible for the Railway Administration to augment its supplies of haulage and truckage, so that the shortage of our truck supply, from which we have so long and so severely suffered, has again been a prominent feature with us and our neighbours during the past year. I know that the Railway Management have for long past had large supplies of trucks and locomotives on order, but during the war these orders could not be executed; nor can we anticipate even now that existing world conditions will permit of those orders being fitted in time to effect any material improvement in rolling stock during the current year. So that, for the present, we must continue to make the most of what we have with the best grace possible.

Another serious drawback with which we had to contend during the year, and particularly the latter part of it, was a shortage of native labour. As most of you are aware, the coal mines obtain the bulk of their coloured workers from Portuguese territory. In consequence of the influenza scourge which ravaged South Africa last year, this supply was entirely cut off. It has not even yet been resumed, although I am glad to say that we have good reason to hope that the supply channels for this class of labour will soon be reopened. The stoppage had the serious effect of preventing us from replacing our time-expired boys, and in consequence our labour complement has been very inadequate to our needs.

Despite, however, these serious drawbacks, we have had a fairly successful year, our output being 295,955 tons, which is within 7,398 tons of the 1917 figures, which latter were nearly 7,000 tons in excess of those for 1916. You will find on reference to the accounts that our sales resulted in a profit of £27,984. We distributed during the year an interim dividend of 5 per cent., and we are now making a further distribution at the same rate, making a total dividend of 10 per cent., and I think you will agree with me that under circumstances such as we have been passing through this must be regarded as satisfactory.

Assuming the rolling stock and native labour difficulties to be surmounted, we might fairly look forward to a substantial improvement in the coal trade, in which we should enjoy our full share. We may look particularly to augmented sales in the overseas markets. There is plenty of demand for our coal at overseas ports, always provided that the price is right. Overseas trade, however, means that we must have good railway facilities, and ships to carry our product. The Railway difficulty I have already referred to. As regards shipping, you know that the world has lost a large proportion of its mercantile fleets, and it will take some time to replace them. It has been suggested in our own Parliament recently that time has arrived when the Union should consider the advisability of acquiring a merchant fleet of its own. Were they to do so, the ships would be at all events sure of obtaining coal cargoes as outward freight from South Africa. There is, however, another danger which, although it has not yet been sprung upon us, is nevertheless in the air. There is all over the world a feeling of unrest in the minds of white workers, who consider, and in many instances rightly so, that they are entitled to demand shorter hours of work and higher pay. They argue that the resultant increased costs can be passed on to the consumer of the product of their labour. That, too, may be true in some trades, but what I want particularly to emphasise is that it is not true as regards the South African coal trade. In order to establish and carry on that trade we have been obliged to enter into contracts: railway, shipping, export, and the like, which bind us to fixed prices for years to come, and it is impossible to increase those prices until the contracts have terminated.

Again, the only possibility of carrying on an overseas coal trade is contingent on our ability to meet on even terms our overseas competitors. Our margin of profit is very narrow, and it has already been seriously eaten into by the increased costs of commodities and material, war bonuses, etc., which have accrued during the war period. We are selling coal of high quality at pit's mouth prices which are by far the cheapest in the world, and in that we cannot help ourselves, because the exigencies of trade competition compel us to do so. If our costs are still further swollen by an additional burden of decreased hours of work and yet higher pay, and since, for the reasons given, we cannot increase the selling price of our commodity, we shall arrive at a point when it will be impossible to continue to work the collieries. I do not fear that we shall get to that, because I have too much faith in the ability of the Labour leaders.

They are brainy men, who appreciate the force of economic facts, and I know they will give full weight to them. A matter which has for a long time considerably exercised the minds of your directors and those of our neighbouring companies is the question of by-products. Your Board are uncomfortably aware that a very valuable asset is going to waste in our slack-heaps, and we are fully alive to the importance of dealing with the problem. The difficulty which has confronted us in the past is that it has not been possible during the war to obtain the best expert advice, otherwise the matter would have been dealt with at an earlier date. We are now taking energetic steps, and we hope before we meet you again to have something definite to tell you on the subject.

I will now pass to the subject of our recent special general meeting held on the 18th February last. The object of that meeting was the formation of the Cassel Clydesdale (Springs) Gold Mines, Ltd., of which you unanimously approved. That company has now been registered, and, as set forth in our directors' report now before you, the Cassel Company receives £100,000, fully paid in £1 shares, in the Cassel Clydesdale (Springs) Gold Mines, Limited, as consideration for the transfer of our Springs interests, viz., the 635 acres of Daggafontein to which I have made reference from time to time at our annual meetings. In addition to the £100,000, our shareholders have further valuable consideration in respect of rights which we have secured for them to participate in the provision of working capital for the Cassel Clydesdale (Springs) Gold Mines, Limited. The nature and extent of those rights were fully detailed to you at the special general meeting, and in the circular and notice convening that meeting, and it is not necessary to repeat them here. Due notice will be given to every shareholder when the time arrives for the exercise of those rights, and I do not doubt that they will be well availed of. I say this confidently, knowing as I do the great potentialities of the Cassel Clydesdale (Springs) Gold Mines, Ltd., and also knowing that the working capital provision which has been made is ample to carry that company to a successful issue.

I was not present at your last annual general meeting in March, 1918. As the then acting chairman informed you, I was absent in Capetown on your business, moving for the passing of the Mining Leases Amendment Act (No. 30 of 1918). It is the promulgation of that Act that rendered possible the flotation of the Cassel Clydesdale (Springs) Gold Mines, Limited, which is not only excellent business for us as shareholders, but it is also an additional and valuable asset to the Union, to the revenue of the country and to its wage-earners, and traders. I must not close without paying a well-deserved tribute to Mr. Barlow, our able general manager, and the staff of the company for their valued services, during the year under review. I now beg to propose the adoption of the directors' report, balance sheet, and profit and loss accounts.

The report and accounts were adopted. Messrs. J. Dale Lace and W. J. Gau were re-elected to the directorate.

Messrs. F. W. Diamond and English and Mr. Chas. Stuart were re-appointed auditors.

THE
S. A. Mining
AND
Engineering Journal

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Notes and News.

Daggafontein.

Excellent sinking progress was made in the No. 2 shaft of this company last month. We understand that over 180 feet were sunk during March.

* * *

Southern Rand Mines.

Mr. W. G. Holford is reporting on the properties of the Southern Rand Mines Syndicate, in the Heidelberg district, which are referred to at length elsewhere in this issue.

* * *

Bushveld Tin.

This company has recently located a small mineralised patch containing cassiterite in highly payable values on Enkeldoorn, and work is proceeding with a view to proving the value of the discovery.

* * *

West Springs.

We learn that the development work undertaken by Springs Mines, Ltd., into the area of the West Springs Company is now disclosing more encouraging results, and that the indications point to the probability that the drive is entering a "shoot" of profitable value.

* * *

A New "Bank of Africa"?

A London registration obviously designed to secure and protect a title is that of the "Bank of Africa, Limited," with a capital of £100 in £1 shares, to carry on the business indicated by the title—which is comprehensive enough. It will be remembered that the former Bank of Africa, founded in 1879, of which Lord St. Aldwyn was chairman for a considerable time, was absorbed in 1912 by the National Bank of South Africa.

* * *

Mr. Gwelo Goodman's Mining Pictures.

Mr. Gwelo Goodman, the well-known South African painter, is giving an exhibition of studies and drawings of mining subjects at Mr. Herbert Evans' gallery next week. It will be remembered that Mr. Gwelo Goodman last year executed a number of delightful pastels of Rand mines, most of which found their way into the possession of local collectors. He also did a most successful series of paintings of the De Beers mines; and this year he has made several striking studies of the Premier diamond mine, which will be included in the pictures on view next week. The exhibition opens on Tuesday, and should prove of the greatest interest.

* * *

Provincial Profits Tax Upheld.

The Transvaal Division of the Supreme Court this week upheld the right of the Provincial Council to levy taxation on the gold mining companies, but doubtless the case will be carried to the Appeal Court. The case given against the New Modder G.M. Co. at Pretoria by the unanimous decision of three Judges was understood to be a test one, and it is unlikely that the companies concerned will fail to have the whole question of the rights of the Provincial Council to tax them threshed out in the highest legal tribunal.

* * *

The Strike Troubles.

Events have moved quickly in the labour world since our last issue. Owing to the mediation of the Administrator and the Ministers of Justice and Defence, the Municipal strike was settled last week-end. As a result several members of the Johannesburg Town Council have resigned, and controversy is rife regarding the whole affair. The native trouble seems also to be over. Unfortunately the builders' strike continues, though as a result of the intervention of the Administrator the difference between masters and men seems now to be reduced to a halfpenny per hour. A ballot of all the unions affiliated to the Federation of Trades is now being held on the question of a general strike in support of the builders. The result cannot be known till the end of next week.

H.I.M. Ministry of Munitions.

It will be remembered that Mr. Cameron, the consulting engineer, was appointed by H.M. Government as Assistant Controller on Aeroplane Production. He is now Director of Salvage. Mr. Kenneth Austin, who left the Rand in 1917 to assist Mr. Cameron as Production Officer, has returned to Johannesburg and will be resuming his position in the business and engineering contract world of the Witwatersrand mines, irrigation and railway works. He is also renewing his connection with the Navy League work in Pretoria and Johannesburg.

* * * *

Our Coal Export Possibilities.

The articles which recently appeared in this journal on the subject of South African coal appear to have dispelled some of the lethargic atmosphere which has hitherto enveloped one of the principal assets of this country. In connection with a recent interview with Sir Harwood-Banner, who said it would not be surprising, in view of the labour position in Great Britain, if large quantities of South African coal were sent here to compete with coal produced in this country, it is now learned in London "on excellent authority" that if shipping facilities are available Transvaal coal could be landed at Swansea at a profit. A Reuter cable adds: "The cost in Wales of delivering a ton of coal at Portsmouth is now 20s., compared with 7s. 6d. down to 4s. 6d. in South Africa."

* * * *

Leeuwpoot Quarterly Report.

The report of operations at Leeuwpoot for the quarter ended 31st March, 1919, is as follows:—Stamps, 17 (including 2 Nissen); time run, 68.08 days; tons crushed, 8,113 short tons; concentrates won, 167 long tons. Average assay value of concentrates is 60.34 per cent. metallic tin. Average price of metallic tin on which the quarter's revenue has been determined is £214 16s. per ton. Estimated loss, £2,140 14s. 10d.; net adjustments in respect of previous shipments, £211 7s. 8d.; loss for quarter, £1,929 7s. 2d. Capital expenditure: The sum of £3,925 9s. 1d. has been expended for machinery, buildings, shaft sinking, etc. During the quarter a sum of £1,622 12s. for development redemption has been included in working costs.

* * * *

Mine Managers' Association.

The secretary of the Association of Mine Managers of the Transvaal writes:—"At the monthly meeting of the Council of this Association held on the 4th inst., attention was drawn to a paragraph which appeared in the 15th March issue of your Journal under the head of 'A Mine Managers' Union,' from which the wrong impression is conveyed that the Mine Managers of the Rand contemplate forming themselves into a Union. I am directed by my Council, therefore, to ask you to be good enough to remove this impression in your next issue, as no such Union is contemplated. The present constitution of this Association already admits to membership all mine managers of the Transvaal, whether of gold, coal, diamond or base metal mines, and the only step which is under consideration is the enlarging of the scope of the Association so as to include the whole of South Africa, instead of the Transvaal only, and to render eligible for membership those who, while not actually mine managers, possess the qualifications which might ultimately result in their becoming managers of mines."

* * * *

The Diamond Dredging Contract.

The debate on the diamond dredging contract in the House of Assembly this week certainly did not reflect favourably on the business methods of the Minister of Mines or of his advisers. In reply to the criticisms of Mr. Merriman and others, Mr. Malan had to admit that he had made an error of judgment in not publishing the terms of the contract when it was first made in the *Union Gazette*, and, secondly, in not publishing the correspondence without delay when Mr. Papenfus called for the papers. The papers were laid on the table, and some delay occurred before they were printed. Had the contract been published in the *Gazette*, Mr. Malan owned that a good deal of rash specula-

tion at Johannesburg might have been avoided. Mr. Jagger, who followed up Mr. Merriman's question as to the authority under which the contract was made, pointed out that the terms of the contract practically compel the Government to renew it after peace has been signed. "But it may be for only one day," said Mr. Malan. At a later stage Mr. Papenfus held that this was a dishonest evasion, inasmuch as Mr. Ambrose Carrol would naturally suppose that the contract would be renewed for a reasonable term. On this point, however, Mr. Malan explained that it was clearly understood by the contractors that the contract might be renewed for one day only, the Government being thus enabled to review the arrangement in the light of further information, and as it now appears that both Dr. MacNeillie and Mr. Fawcus know of gentlemen who claim prior rights of discovery, revision may be necessary before the contract is renewed. The contract was referred to the Select Committee on Public Accounts, which usually does not mince matters when dealing with affairs of this sort.

* * * *

Land Survey in the Union.

The last issue of the "Journal of the Institute of Land Surveyors of the Transvaal," recently published, contains many references to the urgent need, in the public interest, for the improvement of the present system of land survey in South Africa. For several years past the Institute has been endeavouring to bring about legislative conditions directed to ensuring that the survey of land throughout the Union shall in all cases be carried out in accordance with modern and scientific principles, and in such a manner as to afford absolute security of title to landed property. The united efforts of the South African survey profession have been enlisted in the endeavour to procure legislation embodying such a remodelling and consolidation of the survey laws as may enable South Africa to hold a foremost place among the Dominions in this respect. The publication under notice comprises the record of the proceedings at the annual meeting of the Transvaal Institute, which bear repeated testimony to the great stress laid in professional quarters on the vital importance of pressing upon the Government the need for the prosecution of secondary and tertiary triangulations, and the topographical survey of the Union, as well as the general need for bringing the whole survey system up to date.

* * * *

Strikes and Trade.

South Africa is not the only part of the British Empire where business is being held back by labour troubles. In an article in a London contemporary designed to point out how reckless strikes are sending money abroad and helping the foreigner, the writer adduces as an example the case of the North British Locomotive Company and a South African contract. The British tender was all right as to price and time of delivery, but the latter undertaking had to be safeguarded by a proviso as to labour troubles. The South African customer asked that the strike clause should be omitted from the promise, and the British firm could not do this in view of the outlook. So, says the writer, that order went to the United States.

* * * *

Rhodesia and the Small Man.

During the war, the Rhodesian Administration extended certain special privileges to the "small man." Recently the Administration intimated that as hostilities had now ceased it was considered desirable to terminate the system of granting special protection of claims, and the 31st July next was fixed as the date when this privilege should end. The Rhodesia Chamber of Mines pointed out that owing to the present scarcity of native labour and other causes, it would be impossible for claimholders to execute the arrears of development work required to be done by that date, and a deputation from the Chamber interviewed the Administrator on the subject. The result was that the date has now been extended to the 31st December next, and provided that all reasonable steps shall have been taken to complete the work by that date the Government will be prepared to treat sympathetically, with a view to further protection, any case where it has been found impossible to complete all the footage due to be done by that date in order to obtain the necessary inspection certificate.

TOPICS OF THE WEEK.

THE LATEST PHTHISIS COMMISSION'S REPORT.

AMONGST the most important measures to be considered by the Union Parliament in the next few days is the new Miners' Phthisis Bill, a consolidating measure, which also embodies several important new principles, and in regard to which there is said to be a strong divergence of opinion between the Government and the Labour representatives. The Bill is the outcome of the Commission appointed by the Government in June last to enquire into the working of the various Miners' Phthisis Acts, and to draft an amending and consolidating measure. That Commission consisted of seven members, of whom Sir Willem van Hulsteyn was chairman; and it has issued three separate reports. The first is signed by the chairman and Messrs. W. Rokey and E. L. R. Kelsey; the second by Messrs. H. W. Sampson, J. Forrester Brown and E. J. J. van der Horst; and the third by Dr. De Jager. To the first two reports are attached draft Bills, and there is also an important annexure by the Government Mining Engineer, Sir Robert Kotzé. Miners' phthisis throughout the report is called silicosis, and the first report proposes to divide the various stages of the disease in future into "ante-primary," "primary," and "secondary," instead of the two latter as before. Increased compensation is proposed for miners affected in each of these stages as follows: A miner in the ante-primary stage is to be paid an amount of £200 in one sum provided that the applicant in each case has been employed at a scheduled mine within six months previous to the date of his application. A miner in the primary stage is to be paid the sum of £375 in such instalments as the Board in its absolute discretion thinks fit, plus interest at $4\frac{1}{2}$ per cent. per annum, calculated from time to time as the Board may determine. The amount, it will be observed, is £75 more than that fixed by the Act of 1916. This is thus explained in the report: "We recommend it, having regard to our recommendations in paragraph 14 (which deals with the period between the beneficiary's relinquishing work underground and the date when he seeks surface employment), and further it may have the effect of satisfying those who hold the belief that analogy exists between the primary stage in silicosis and partial disablement by accident." A miner in the secondary stage is to be paid an allowance for the remainder of his life of not less than £10 or more than £15 per month, conditioned by the fact of his being married. Under the heading "coloured persons," the first report recommends that coloured men and their employers should be placed, as regards contributions, upon the same footing as Europeans and their employers. In regard to the Native Labour Department suggestions that the benefits payable under the Act to native labourers for silicosis in the primary stage, or pure tuberculosis, should be increased on a sliding scale, the report says: "It is, in our opinion, much more important to secure the present law in regard to the native labourer being carried out in all its details than to increase the amount of benefits now payable to them which we consider fair and reasonable." The second report, signed by Messrs. Sampson, Forrester Brown and the Rev. Mr. Van der Horst, recommends that a miner in the ante-primary stage be paid an amount equal to one year's average earnings, to be paid him in one sum. A miner in the primary stage is to be paid an amount equal to two years' average earnings, such benefit to be paid to the miner in a lump sum unless the Board considers, for reasons of which it is the sole judge, that the adoption of any other course is preferable. Should the amount be paid in instalments, interest calculated at the rate of $4\frac{1}{2}$ per cent. per annum shall be added. A miner in the secondary stage is to be paid a monthly allowance for the remainder of his life on

the basis of 50 per cent. of his average earnings up to £240 per annum, 25 per cent. of his average earnings above £240 and up to £340 per annum, 5 per cent. of his average earnings above £340. Proportional increases are recommended in the case of married men. It is added that "for the purpose of calculating the average earnings of a miner his earnings for the last 156 days which he has worked prior to his making application shall be taken as the basis. A year shall be deemed to consist of 311 working days." In the third report Dr. De Jager says that, broadly speaking, he is in favour of the awards laid down in the report of the chairman for ante-primary and primary silicotics for tubercular cases and for silicotics complicated by tuberculosis (classes as secondary cases), but wishes the awards so graded as to ensure a higher award the longer the employee mined without contracting silicosis, and is in favour of a life allowance for miners in the secondary stage, and proposes that this life allowance shall be made up from three distinct funds so graded as to be higher in direct ratio to the time the miner was engaged in mining. Dr. De Jager also makes the rather surprising suggestion that the present number of mine inspectors ought to be "nearly trebled"; but we do not think the recommendation will be taken seriously by the Government. On one point all the Commissioners seem to be agreed, viz., the desirability of appointing a special ventilation expert for the Rand, and the Minister of Mines declared in the Assembly during the week that the Government would adopt the suggestion. All the Commissioners seem likewise agreed in their praise of the excellent work done by Mr. H. O. Buckle, the Chairman of the Miners' Phthisis Board, but this does not preclude the Labour representatives from strongly criticising the rest of the *personnel* of that body. The Labour people also recommend that the miners' contributions to the Insurance Fund should cease with the passing of the suggested consolidated measure. The feature of Sir Robert Kotzé's statement is his proposal to alter the present system of levying contributions on the mines for the phthisis funds. Briefly put, Sir Robert's proposal is to levy contributions on a basis of making each mine pay towards the compensation of each beneficiary proportionately with the period during which the latter had worked on such mine. The Government Mining Engineer certainly makes out what seems a good case for his view, and it will be interesting to see its fate at the hands of his Ministerial chief. Indeed, it would seem wiser to postpone further discussion of the many other points raised in the three reports before us until we have the draft Bill of the Government embodying, doubtless, the best features of all the recommendations made.

The Kalahari Lake Scheme.

In this issue we publish the last of a very interesting series of articles by Professor E. H. L. Schwarz on the subject of the reclaiming of the lost lakes in the Kalahari. This scheme is probably one of the largest engineering projects put before the country, and notwithstanding the small amount of opposition to Professor Schwartz's scheme, the subject is so far-reaching and has attracted such an enormous amount of interest amongst some of our members of Parliament as well as influential men in England that we purpose to deal with the subject in next week's issue when we hope to reproduce the latest map showing the points at which the Professor suggests that the weirs across the various rivers should be constructed in order to change the course of the streams and thus reclaim the lost lakes. Professor Schwarz has made it quite clear, in this week's article, that he does not propose that large sums of money should be immediately expended on his scheme, but that the works be expanded gradually and dependent upon results. For instance if the first experiment were to start, say by constructing a weir across the Chobe river at Ngoma, the flood waters instead of running into the sea would find their way into the Okavango and then into Lake N'gami, and as the rivers became more settled in their new courses the permanent works could be constructed.

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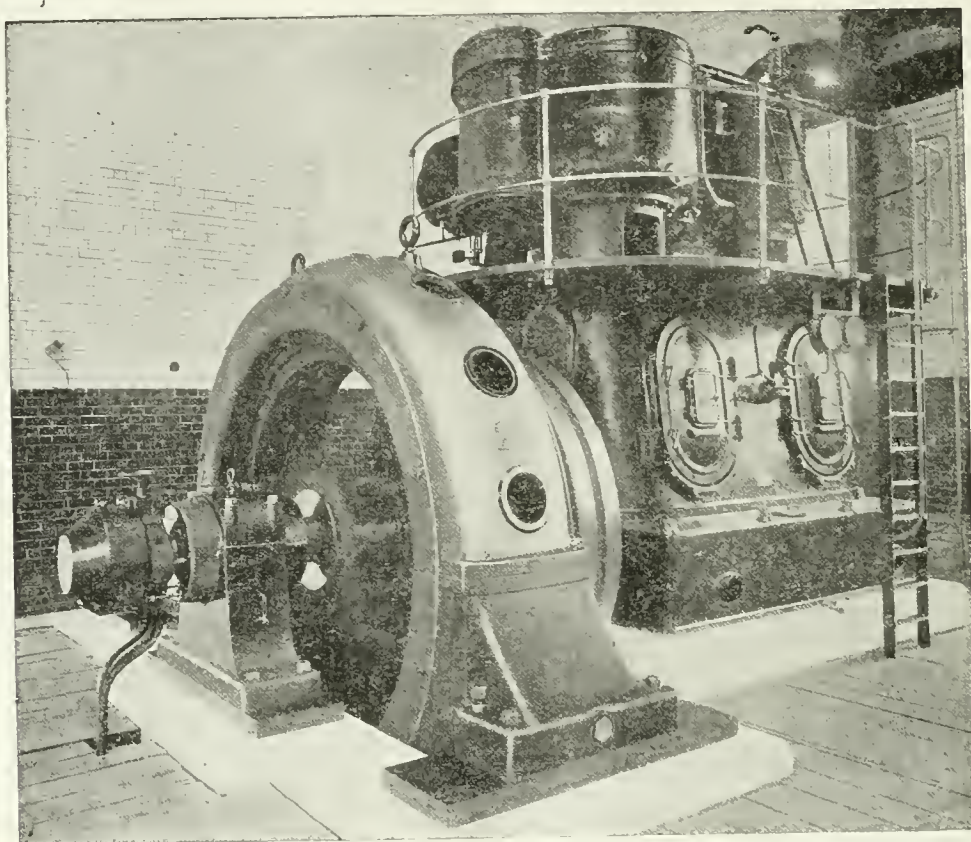
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WHAT IS HAPPENING AT THE SPRINGS MINES?

The Assay Plan and What It Discloses—Why the Grade and Profit are Down—A Conspiracy of the Fates—Progress in the Deep Shaft—Idle Rumours and Actual Facts—The Long Drive Canard—No Intention at Present to Increase Plant—The Coy's. Finances Examined—What will the Dividend Be?—The Quarter's Results and the Half-year's Prospects—Changes in Management.

PROBABLY no other mine on the Witwatersrand has bulked so largely in the eye of the investor and speculator of recent months as Springs Mines. The meteoric advance in the price of the shares up to 76s. has been followed by a steady decline in price, and during the last few weeks there has been a marked and rapid downward movement which has touched many pockets, disappointed many hopes and set numerous rumours afloat on the sensitive atmosphere of the local market. Eight weeks ago Springs Mines shares were dealt in at 66s.; this week they have touched 50s. 6d., and numerous anxious holders have been disturbed by bear reports that the shares will be knocked down to forty shillings before they see sixty again, that the development position is bad, that a four thousand feet drive in barren ground has prejudiced the whole scheme of underground exploitation and gold winning, that the dividend in June will be a negligible sum if the distribution is not passed over altogether, and so forth and so on. It is not within our ability or purpose to forecast the future movements of Springs shares either one way or the other, but we are in a position to state that the report about the 4,000 ft. drive in valueless ground is false and that whatever faults there may have been in the lay-out of the mine the position in regard to values and widths in the development faces to-day is satisfactory. We may also be permitted to conduct a calm and impartial enquiry into the present financial state of the company and without in any way attempting to anticipate the action of the directors at a long interval from the day when the board "makes up its jewels" and decides on the amount to be distributed in respect of the operations for the first half of 1919, it will be of interest to note the financial results secured in the first quarter of the year and also in the final months of last year.

RECENT RESULTS.

Since September, 1918, the productive operations of this company have resulted as under:

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
September ...	39,100	86,683	44 4	23 3	40,323	20 8	
October	35,450	73,383	41 5	23 11	31,748	17 11	
November	32,000	72,343	44 6	24 6	32,446	20 3	
December	28,800	68,108	47 4	25 9	30,200	21 0	
1919.							
January	33,350	72,450	43 5	25 3	30,287	18 2	
February	35,300	68,022	38 6	24 3	25,271	14 4	
March	37,350	70,738	37 10 5	25 2	23,729	12 8	

It will be noted that the working profit earned by Springs Mines last month was £23,729, or 12s. 8-473d. per ton milled. This compares with £25,271, or 14s. 4d. per ton in the preceding short month of February, and with £30,287, or 18s. 2d. per ton in January. An official note explains that the reduced profit for March is due to a fall in grade of some of the principal stopes, combined with an increase in working costs.

WHY THE GRADE DROPPED.

What has happened at Springs has been no unusual occurrence in the history of the Rand and essentially so in the history of the Far East Rand. There is no significant diminution in pay values in any particular portion of the mine. It has so happened that several of the more important stope faces have recently encountered ore of somewhat lesser value than the average value of the payable ore developed to date in the mine and that simultaneously there has been a shortage of stope faces in ore of higher value chiefly on account of the temporary disorganisation of the company's native labour complement. The consulting engineer's report for the year ended with 1918 states: "The

payable ore reserve as at the end of the year was estimated at 2,368,000 tons of an average assay value of 9.3 dwts. per ton over an average stoping width of 61 inches. Compared with the estimate at the end of the previous year, the tonnage is lower by 199,000 tons and the average assay value by 0.5 dwts. The estimated stoping width is greater by 3 inches. . . . The average yield of the present ore reserve is estimated at from 38s. to 12s. per ton milled, according to the proportion and value of ore to be derived from sources outside the payable reserve." It will be observed that the average value of the ore milled in the months of February and March has approximated to the lower figure contained in the report of Mr. Knecht, the company's consulting engineer, on the average yield of the ore reserves.

THE DEVELOPMENT POSITION.

Through the courtesy of Mr. Lynch, chairman of the company, a representative of this journal has had the opportunity during the past week of examining the assay plan of the mine. The latest development results show that the average percentage of payability, considered in conjunction with width and value expressed in terms of inch-pennyweights, is being maintained, and that at most of the important points of the mine the development faces are in ore of profitable value. On both the eastern and western sides of the mine the position is satisfactory, and it is also satisfactory in the southernmost workings, i.e., in the new lease area.

THE SHAFT IN THE LEASE AREA.

The No. 3 shaft, which is located about 5,200 feet south of the south shaft, has now reached a depth of over 800 feet in the lease area. The reef in the southernmost section of the property is rising at an angle of about 15 degrees to the west, and this obviously means that the shaft will intersect the ore body at a lesser depth from surface than was originally reckoned on.

NATIVE LABOUR.

The company's operations have been seriously disorganised on account of the epidemic of Spanish influenza, which resulted in a subsequent shortage of native labour and a decrease in tonnage milled and profit earned during the final months of the year. The effect of the disorganisation of labour has also been felt in the current year, as both the January and February operations were prejudiced thereby. The mine is now in a much more satisfactory position in regard to native labour; indeed at the present moment the company has an excess of natives over requirements. Inasmuch as a number of East Coast natives are due to leave the mine, however, within the next few months, it has been a wise provision to build up and train an excess of boys so that the danger of again experiencing a shortage of natives shall be minimised.

MILLING EQUIPMENT.

The present milling equipment of the mine consists of 80 stamps and 8 tube mills, and there is at the moment no intention of increasing this plant although the erection of additional equipment at some time has naturally enough to be borne in mind and considered in conjunction with the question of the policy which it may be determined will be the most profitable for the company to pursue. At the present time, however, this matter is not under consideration and it is improbable that the installation of any additional milling plant will be contemplated prior to the striking of the reef in the company's southern shaft.

A WORD ON THE MANAGEMENT.

The changes which have recently taken place in the affairs of the Consolidated Mines Selection group have not at the moment of writing been completed. Mr. Carl Davis has succeeded Mr. C. E. Knecht as consulting engineer, but inasmuch as Mr. Davis has for years confined his attentions to Brakpan it is only reasonable to assume that it will take him some little time to fully appreciate the position at Springs and give to that company the best of his technical talents. The appointment of a new manager for Springs has not yet been finally settled, but we anticipate that within the next few days we shall be in a position to make a definite statement on this important appointment. In the meantime Mr. C. B. Brodigan remains as acting manager.

FINANCE.

The report of the directors to be presented at the tenth ordinary general meeting of shareholders on Friday, 23rd May next, shows that the profit from operations during the year 1918 amounted to £423,695 14s.; additional war charges on gold realisation and war relief funds and donations absorbed £9,949 16s. 4d.; interest, commission and exchange, interest on debentures after allowing for dividends on shareholdings, profit on the sale of West Springs shares, etc., amounted to a further £11,554 0s. 2d.; and the net balance of revenue over expenditure accordingly amounted to £402,191 17s. 6d. To this has to be added the balance to appropriation account as at December 31, 1917, viz., £214,953 16s. 3d., making a total available credit of £617,145 13s. 9d. Against this latter sum there has been appropriated £407,290 4s. 9d. in respect of Government taxes, Government participation in profits, dividends Nos. 1 and 2, and development suspense account, leaving a balance unappropriated at December 31, 1918, of £209,855 9s. 0d. Profits for the first quarter of the year have averaged £26,429 per month under unfavourable conditions, and if this rate is no more than maintained for April, May and June, the company will secure a working profit of, say, £160,000 for the first half of 1919. The company's issued

capital is £1,153,000 and after making all allowances for profits tax, etc., the company should have a balance large enough to justify the payment of a substantial dividend at the end of the six months.

Further features which inspire confidence are the facts that the controlling house have acquired the enemy holdings in Springs and Brakpan Mines and also that 346,500 ordinary £1 shares are to be taken up by the parental company at a price considerably in excess of the present quotation.

THE FAR EAST RAND SHOOTS.

The existence of shoots or patches of ore of high value with alternating zones of impoverishment on the Far East Rand is a characteristic feature of that gold field. Dr. Mellor, in his noteworthy paper on the Rand conglomerates referred to the existence of "shoots" of particularly good ore and to the interspaces between such patches being occupied by conglomerate of an inferior degree of development and containing relatively low values and a lesser thickness of reef. The history of the Far East Rand has time and time again demonstrated the existence of alternating shoots of rich and poor ore, and the experience of more than one company has naturally been reflected in share market quotations according to the disposition of the patches with reference to stopping and developing operations. Brakpan has gone through a similar experience to that which has now fallen to the fate of Springs. The recovery per ton of the Springs Co. in the immediate future is in the lap of the gods; no one can predict exactly what it will be. But after an examination of the company's assay plan and latest development figures we do not think that Springs is at all likely to become a low-grade mine. In regard to working costs the outlook for a reduction under this head is promising and it seems to us that the probabilities are that there will be no further substantial drop on present profits.

Rand Water Board.

Engineer's Department.

VAAL RIVER SCHEME.

CONTRACT No. 175.

TENDERS ARE INVITED FOR THE SUPPLY OF 36 STEEL GATES 30 FT. WIDE AND 25 FT. 4½ IN. HIGH FOR THE VAAL RIVER BARRAGE.

The Contract documents and copies of plans can be obtained on and after the 17th April on application at the office of the Chief Engineer, Rand Water Board, Second Floor, Central House, upon a deposit of five guineas, which will be returned on receipt of a *bona fide* tender.

Tenders are to be accompanied by a certified cheque or cash deposit of £1,000, which the Board may retain if the Tenderer withdraws his offer within six weeks of the date when tenders are opened.

NO TENDER WILL BE CONSIDERED UNLESS ACCOMPANIED BY THE DEPOSIT REFERRED TO IN THE PRECEDING PARAGRAPH.

All tenders are to be deposited at the Office of the SECRETARY, RAND WATER BOARD, CENTRAL HOUSE, or P.O. Box 1703, JOHANNESBURG, by or before noon on Thursday, the 28th day of AUGUST, 1919.

The Board is not bound to accept the lowest or any tender.

W. INGHAM, M.Inst.C.E., M.I.Mech.E.,
Chief Engineer.

Leeuwpoot (African Farms) Tin Mines, Limited.

(INCORPORATED IN THE TRANSVAAL.)

Notice to Shareholders.

NOTICE IS HEREBY GIVEN that the SEVENTH ORDINARY GENERAL MEETING OF SHAREHOLDERS in the LEEUWPOORT (AFRICAN FARMS) TIN MINES, LIMITED, will be held in the Board Room, The Jeppe Arcade, Commissioner Street, Johannesburg, on THURSDAY, 19th JUNE, 1919, at 3.30 p.m., for the following business:—

1. To receive and consider the Directors' and Auditors' Reports, the Balance Sheet, and Profit and Loss Account, for the year ended 31st December, 1918.
2. To elect two Directors in the places of Messrs. A. G. Gill and E. M. Hind, who retire in accordance with the Articles of Association, but are eligible and offer themselves for re-election.
3. To appoint Auditors for the ensuing year, and to fix remuneration for the last audit.
4. To transact general business.

The Share Transfer Books of the Company will be closed from 12th to 19th June, 1919, both dates inclusive.

By Order of the Board of Directors,

O. F. BROTHERTON

(for the Witwatersrand Township, Estate and Finance Corporation, Limited, Secretaries.)

Head Office:
The Jeppe Arcade,
Johannesburg.
11th March, 1919.

THE GREATER HEIDELBERG GOLDFIELDS.—VII.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

The Moffat Line—A Survey of the Properties of the Southern Rand Mines—Initial Prospecting and what it has Disclosed on Nootgedacht, Elandsfontein and Platkopie—Shales and Amygdaloid—A Reef that is not a "Grit"—Dr. Corstorphine's View—More Expert Opinion to be Obtained—A Legitimate Line for Exploitation.

HAVING detailed the nature of the initial development work proceeding on the Houtpoort - Town Lands - Boschhoek-Eendracht properties of the Sauer-Bleloch interests and the results so far secured along this line, we will proceed with a brief account of the properties with which Mr. Moffat and certain influential capitalists are identified. We have already dealt with the late Dr. Corstorphine's report for the Platkopie Syndicate on the farms Nootgedacht (261), Elandsfontein (281) and Platkopie (63), which constitute what may conveniently be termed the Moffat line of country.

ON NOOTGEDACHT.

A week or two ago a representative of this journal accompanied Mr. Moffat along the line of reef which has been opened up on Nootgedacht, Platkopie and Elandsfontein, and the results of his observations are briefly recorded hereunder. These farms, together with Koppiesfontein No. 304, lie to the south-west of Heidelberg and cover an extent of country approximating to 14 miles from the southern boundary of Koppiesfontein on the south to the northern part of Nootgedacht on the north. Leaving Heidelberg to the north-east a drive of about four miles takes one on to Nootgedacht, just outside the northern boundary of which a typical development of amygdaloidal diabase is to be observed. The greater part of Nootgedacht is overlaid by quartzites and conglomerates of the Upper Witwatersrand formation, but on the eastern portion of this farm the slates, quartzites and banket beds of the lower Witwatersrand formation are clearly exposed. There are certain old workings on this farm—workings of the 'nineties—and it is reported that in one of these prospects a conglomerate body which has been correlated with the Bird Reef was opened up and gave values of seven dwts. per ton.

DE HOEK.

To the east of Nootgedacht lies the farm De Hoek No. 68. On the extreme south-western point of this farm a reef has been exposed by trenching. Judging from its geological horizon this reef is the same as that exposed on Nootgedacht to the north and on Elandsfontein and Platkopie to the south. On the corner of De Hoek the reef is 15 inches wide and dips at a low angle into Nootgedacht. It is proposed to sink a shaft here at no great distance from the De Hoek fence, with a view to intersecting the reef at a shallow depth.

ELANDSFONTEIN.

To the south of Nootgedacht lies the farm Elandsfontein 281. The valley of the Sugar Bush River cuts through this property, which over its greater part is overlaid by the sandstones and coal measures of the Karroo system. On the south-western and north-eastern portions of the farm the lower and upper Witwatersrand beds are not overlaid by Karroo measures and may be clearly observed. At about the middle of Elandsfontein the Consolidated Gold Fields of South Africa opened up a reef lying on slate about 25 years ago. This conglomerate body has been correlated with the Nigel Reef, i.e., the Main Reef Leader according to orthodox geologists.

PROSPECTING ON PLATKOPIE.

South of Elandsfontein is Platkopie No. 63. The southern and eastern portions of Platkopie are overlaid by the amygdaloidal diabase of the Ventersdorp system, but on the western side the Witwatersrand beds are exposed

dipping at an angle of about 25 degrees to the west. A good deal of intelligent prospecting work has been carried out here on a reef lying on shale which is to be observed on the boundary of Platkopie and Elandsfontein and which has been exposed in a trench cutting for half a mile. This reef has a shale footwall and quartzite hanging and dips at varying angles of from 15 to 30 degrees to the west. On the Elandsfontein boundary it is at its flattest, but as one proceeds southwards the angle of dip increases until a point is reached at about the middle of the farm, where there appears to be considerable faulting, and the whole formation swings around to the east. In so far as the exposures in the trench are concerned this ore body exhibits an erratic tendency in regard to width. In places the pebble bed is 15 to 18 inches thick, whilst in other sections the conglomerates thin down to a mere pebble contact. The values obtained in this trench have, we are informed, ranged from 6 to 8 and 14 dwts. per ton. At the southern extremity of the trench the reef and its accompanying beds manifest signs of faulting. The whole formation appears to have been swung around to the south-east and the line of faulting would seem to be roughly denoted by the line of the spruit to be observed on this portion of the farm. Half-a-mile to the south-east a reef which is in every degree comparable with the conglomerate body referred to in the foregoing has been exposed in a shaft. This reef lies on what has been termed a mud shale by one of our most eminent geologists. The shale exhibits silicious amygdaloids and is regarded as possessing marked characteristics which enable one readily to distinguish it from the shale development underlying the so-called Kimberley series of the upper Witwatersrand system. A shaft sunk on the banket at this point has exposed the reef as a well-developed body of conglomerate. But its erratic character which seems in many ways to be comparable with the outstanding features of the Nigel Reef as worked in the Nigel Mine appears to be maintained, since we are informed that on one side of this shaft an assay of 36 dwts. per ton over 2 feet was obtained, whilst on the other side values were negligible. To the south-west of this shaft are the sites of the boreholes put down by the Platkopie Syndicate. These holes were apparently located in igneous rock and obtained no results of any value.

KOPPIESFONTEIN.

Still further to the south is situated Koppiesfontein No. 304, the northern portion of which is covered by the Ventersdorp amygdaloid. As the crow flies it is about 12 miles from the southern boundary of Koppiesfontein to the nearest point on the Vaal River.

TWO CHARACTERISTIC STRATA.

A characteristic and consistent geological feature over the greater part of this line of country is the persistent development of a conglomerate body lying on sandstone with a quartzite hanging wall which is separated from amygdaloid diabase (the so-called "Bird amygdaloid") by a belt of shale. This particular reef development is correlated with the Bird Reef series of the Central Rand. At numerous points it contains an apparently characteristic chalk pebble and it dips at a flat angle to the west. A distance of about 1,200 feet separates it from the line of reef opened up by Mr. Moffat. This overlying conglomerate body has been exposed in several small shafts and cuttings on Platkopie. The reef is frequently split into a series of stringers and at some points assays of 6 dwts. per ton have been obtained, but values appear to be generally erratic.

Another prominent feature of this line is the very marked development of a broad shale bed lying about two miles above the horizon of the reef worked by Mr. Moffat. These shales are particularly noticeable at around the Elandsfontein, Platkopie, Schikfontein boundary beacon, where the Sugar Bush River, after flowing through the eastern portion of Mount Arable, cuts through a very large belt of these shales.

DR. CORSTORPHINE'S OPINION.

The properties which we have dealt with in the foregoing are now under the control of a concern known as the Southern Rand Mines Syndicate, and we understand that the intention is to proceed with the initial prospecting of the farms and the proving of the line of reef thereon exposed. The properties have already received the commendation of the late Dr. G. S. Corstorphine, and with a view to obtaining further confirmation of Dr. Corstorphine's optimistic views and also obtaining expert advice on the best means of exploiting the auriferous conglomerates, it has just been decided to have the properties reported on by two well-known local mining engineers whose names stand high in the profession. The reports of these gentlemen will be awaited with very considerable interest. In the meantime we will content ourselves with expressing the opinion that the line of reef taken up by the Southern Rand Mines offers very promising opportunities for the demonstration of a payable extension of the Witwatersrand conglomerates from Heidelberg onwards. The sponsors of the syndicate are not concerned with the dual reef theory. They contend that

they have in their properties the extension of the reef worked in the Nigel and Sub Nigel mines, that is to say they claim to possess the Main Reef Leader of the orthodox school of stratigraphists. This claim has been supported by Dr. Corstorphine.

A LEGITIMATE ENTERPRISE.

It is not our intention at this juncture to become involved in the controversial subject of reef nomenclature, but we would like to express the definite opinion that the Southern Rand Mines are not engaged in the prospecting of a line of grit or grit contact as has been alleged by a member of the heterodox faith. The reef exposed on the properties referred to in the foregoing is a true conglomerate. It would appear to be a comparatively thin ore body and to have certain erratic characteristics both as regards width and gold content. But it is as much a conglomerate as the Main Reef Leader or South Reef of the Central Rand. Moreover, it is an auriferous conglomerate; it contains gold and at numerous points along the line of prospecting it contains gold in payable quantities. Time and development must be left to demonstrate the average and aggregate values of the Moffat line, but we are unhesitatingly of the opinion that the Southern Rand Mines properties offer legitimate scope for further and substantially more ambitious preliminary development work than they have been accorded up to the present.

(To be continued.)

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IMPROVING OUTLOOK FOR THE DURBAN ROODEPOORT DEEP.

THE consulting engineer's report on the Durban Roodepoort Deep for last year is as follows:—The following figures compare the results from the mine for the years 1917 and 1918: Tonnage milled, 1917 313,850, 1918 300,450; yield per ton milled, 1917 27s. 9d., 1918 30s.; working costs per ton milled, 1917 24s. 8d., 1918 28s.; profit per ton milled, 1917 3s. 1d., 1918 2s.; total working profit, 1917 £48,857, 1918 £30,068; ore reserve, 1917 1,174,200 tons, 1918 1,078,500; ore reserve (value), 1917 6·5 dwts., 1918 6·5 dwts. Increased working costs, caused by the special conditions due to the war, were chiefly the reason for a decrease in profit compared with 1917. The increased in yield was obtained by closer attention to sorting; it was insufficient, however, to counteract the increase of 3s. 1d. per ton in expenditure. The small decrease in tonnage output was due to the irregular native labour supply and to the results of the influenza epidemic. Development operations were again curtailed, so that the tonnage developed, viz., 192,500 tons of 6·6 dwts. value, was insufficient to maintain the ore reserve position. Additions recently completed to the air compressor plant, together with the installation of electric pumps on the lowest levels and the extension of the main hoist and equipment to these points, will improve matters in this direction during the current year. An amount of £6,429 has been accumulated to cover a more extensive development programme. The re-estimated ore reserve at 31st December, 1918, was as follows: Main Reef, 530,000 tons, value 6·0 dwts., stoping width 56 inches; South Reef, 548,500 tons, value 6·9 dwts., stoping width 42 inches; total,

1,078,500 tons, value 6·5 dwts. This is segregated as under: Available for stoping: Main Reef, 108,800 tons, value 6·0 dwts.; South Reef, 368,500 tons, value 7·2 dwts.; total, 777,300 tons, value 6·6 dwts. Shaft and boundary pillars, etc.: Main Reef, 121,200 tons, value 6·0 dwts.; South Reef, 180,000 tons, value 6·5 dwts.; total, 301,200 tons, value 6·3 dwts. Although the total ore reserve shows a reduction of 95,700 tons as compared with the position at the close of 1917, the available reserve is only 55,000 tons less, due to the transfer of certain blocks previously regarded as shaft pillars. Attention was called to this possibility in the 1917 report. It will also be noted that the value of the available reserve shows an improvement of 3 dwt. Mining rights have been acquired from the Government over the area underlying certain water-rights and machine stands. This addition to the mining area totals 17·15 claims. As explained by the chairman at the annual meeting held on June 20th last, it is proposed to open up the deeper levels of the property by means of a new shaft, the position of which is shown on the plan of the underground workings, accompanying the report. Its additional object is to supplant the existing compound shafts, which not only cannot be relied on to handle ore from greater depth, but whose upkeep is a great source of expense. The sinking equipment at the new shaft has been completed at the time of writing, and sinking has been commenced. The general condition of the underground workings has been considerably improved during the year, so that, given reasonable working facilities, the results for the current year should show improvement.

THE VILLAGE DEEP'S YEAR REVIEWED.

THE consulting engineer's report on the Village Deep in 1918 is as follows:—The operations for the year ended December 31st, 1918, are reviewed in considerable detail in the manager's report. The relatively disappointing profit obtained was due to several reasons, the most important being: (1) The necessity for baling water from the bottom of the main hoisting shaft during the abnormally rainy season in the earlier part of the year. The delay in obtaining adequate pumping plant which had been on order for some time threw the work of handling water on to one of the rock hoists, and consequently decreased the tonnage output. (2) The influenza epidemic towards the close of the year. (3) The general shortage of native labour throughout the year, which is more particularly felt at a mine of this type, where practically all the ore is broken by rock drills. (4) The increased expenditure brought about by war conditions. The net result of the above adverse factors may be summarised by stating that when compared with 1917 operations, the tonnage milled was 50,500 tons less, the yield 1s. 8d. lower, and working costs 3s. 1d. per ton higher, with a decrease in working profit of £150,789. The maintenance of an extensive development programme is the most satisfactory feature to which attention can be drawn. Negotiations with the Government for the right to mine under Springfield Extension and a portion of La Rochelle were completed, which enabled a considerable tonnage of partially developed ore, underlying the former, to be added to the ore reserve. Good progress was made with the extension of all levels from the 22nd to the 27th inclusive, while the main incline was sunk to the horizon of the 29th

level. The payable ore developed for the year totalled 840,710 tons of an average value of 6·3 dwts., a figure somewhat under the average of previous years. Re-estimation of the ore reserve position at 31st December, 1918, resulted as follows: Main Reef Leader, 2,280,600 tons, value 6·3 dwts., stoping width 62 inches; South Reef, 16,600 tons, value 7·1 dwts., stoping width 60 inches; total, 2,327,200 tons, value 6·3 dwts. This is classified as follows: (1) Available ore reserve, 1,803,000, value 6·4 dwts.; (2) Shaft and boundary pillars, 524,200 tons, value 5·9 dwts. Compared with the preceding year, the available ore reserve has increased 486,000 tons, whilst its value is 1 dwt. lower. The machinery for the ventilation and pumping service at the lowest points in the mine are now at hand, and as preparations for their reception underground have all been completed in good time, it becomes possible to undertake mining at this unusual depth with some degree of confidence. At the same time, the value of the ore reserve has not improved, and working conditions have become more difficult and expensive. The native labour position has recently improved to a very marked degree, and a higher profit can be looked for with the plant operating on a more extensive scale. It is impossible to predict how long such conditions will last, but it must be perfectly clear that unless operations can be conducted on a basis commensurate with the full capacity of the reduction plant, the profit forthcoming from this mine will be very moderate. The management, staff and employees continue to handle the mine successfully, in spite of physical difficulties which have to be experienced to be fully realised.

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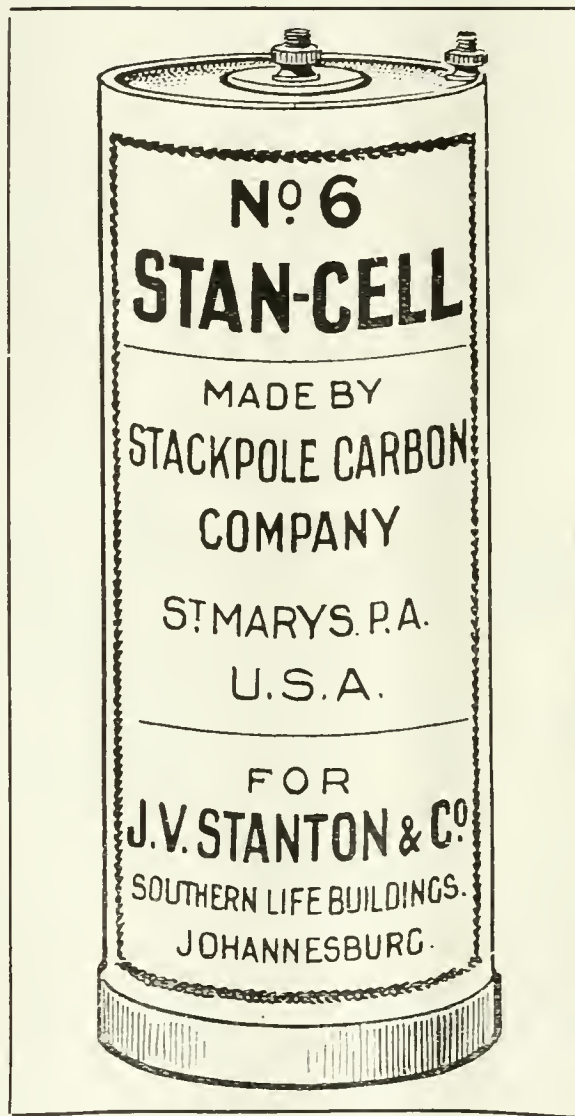
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THE CITY DEEP IN 1918.

The consulting engineer's report for 1918 on the City Deep is as follows:—The following is a summary of the principal features of the work of the last two years: Tons milled, 1917 744,100, 1918 670,100; total profit, 1917 £673,736, 1918 £452,777; revenue per ton milled, 1917 39s. 6d., 1918 38s. 0d.; working costs per ton milled, 1917 21s. 7d., 1918 24s. 8d.; profit per ton milled, 1917 17s. 11d., 1918 13s. 4d.; development footage, 1917 22,361, 1918 18,780; ore reserve, 1917 3,326,900 tons, 1918 3,342,700 tons; ore reserve (value), 1917 9.0 dwts., 1918 9.6 dwts.; coloured labour strength (average), 1917 5,100, 1918 4,982. The continued scarcity of native labour and further large increases in the cost of white labour and supplies have had a most disastrous effect on the profit, which was £220,959 less than that of the previous year. Instead of milling 960,000 tons, which is within the capacity of the mine with its full complement of labour, the tonnage was only 670,100. The work of the mine was further disorganised towards the end of the year by the influenza epidemic which incapacitated about half the labour force, both whites and natives. The ore reserves have been re-estimated, and on 31st December, 1918, stood as follows: Main Reef, 89,800 tons, assay value 5.9 dwts.; Main Reef Leader, 3,252,900 tons, assay value 9.7 dwts.; total, 3,342,700 tons, assay value 9.6 dwts. Of this amount, 306,000 tons are not available for stoping at present. The tonnage remains about the same as it was last year, but there is a marked improvement in value. This is due partly to the fact that the previous year's estimate included a considerable tonnage of ore which was conservatively valued pending the result of further work, but which is now found to be higher in value than was anticipated, and in addition, the year's development has disclosed very satisfactory values. The following remarks regarding the present position and the prospects of

the development will be better understood by referring to the plan attached herewith. The north-western section of the mine continues to afford rich ore. In the bottom of the mine, the 14th level west has been in payable ground for the last 340 feet, and, as was pointed out last year, this drive is approaching a large district in which the reef is almost certain to carry good values. Going eastward, there is a poor but by no means valueless stretch of ground, extending as far as No. 2 shaft, after which, with the exception of two short lengths, the reef in the lowest workings is continuously payable as far as No. 1 shaft. Eastward of No. 1 shaft the results have been disappointing, values are not good and the ground is intersected by three dykes and a number of minor dislocations, but the 13th level drive is now in undisturbed country and the values show a distinct improvement. During the early part of the year I submitted proposals, which you have sanctioned, for operating the deepest portion of your property by means of a vertical shaft from the surface. The area in question lies at a mean depth of about 6,000 feet, and is beyond the scope of the present incline shafts. The installation of the sinking equipment is practically complete, and the shaft has been sunk to a depth of 90 feet. The shaft is circular and 20 feet in diameter, and is designed to reach, it necessary, a depth of 7,000 feet in two stages of 3,500 feet each. As I have already mentioned, the native labour position during the year was most unsatisfactory, and this continues to be the case. The supply is now but little more than half of our requirements, and the output of tonnage has fallen nearly in the same proportion. Under these circumstances, working costs have become excessively high, and the profits have diminished to a figure which is far below the possibilities of the mine.

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Points from the Consulting Engineer's Reports : Progress at the State Mines, New States, Van Ryn Deep and Other Subsidiaries.

GOVERNMENT G.M. AREAS.

In his annual report for 1918 Mr. W. L. White, consulting engineer of the Government Gold Mining Areas, Ltd., writes:—It is satisfactory to be able to record a further improvement in the returns from this mine for the year 1918. The following comparative figures summarise the position over the last four years: Tons milled, 1915 576,100, 1916 744,000, 1917 1,298,000, 1918 1,303,500; yield per ton, 1915 24·983s., 1916 27·117s., 1917 29·748s., 1918 33·181s.; working costs per ton, 1915 19·560s., 1916 21·615s., 1917 19·056s., 1918 19·735s.; profit per ton, 1915 5·423s., 1916 5·502s., 1917 10·692s., 1918 13·446s.; total working profit, 1915 £156,210, 1916 £204,688, 1917 £693,916, 1918 £876,327; footage driven, risen and sunk, 1915 25,278, 1916 32,998, 1917 38,219, 1918 41,640; ore reserves (tons), 1915 3,665,000, 1916 4,930,000, 1917 7,016,000, 1918 9,445,000; value (dwts), 1915 6·9, 1916 7·2, 1917 7·5, 1918 8·0. Attention is directed to the large amount of development work again carried out, the cost of which has all been included in the working expenditure. Of the total footage on reef, 17,230 feet, or 73·6 per cent., was payable, and averaged 16·1 dwts. over 43 inches. The ore milled from these development points was 238,002 tons, being 18 per cent. of the total tonnage milled. That the mine was able under these circumstances to increase its profit for the year by £182,000 is perhaps the most convincing proof of the inherent soundness of this property. From the accompanying plan it will be seen that the ore reserves are widely distributed throughout, and that the blocks are conservatively small. The increase of the ore reserves to 9,445,000 tons of a value of 8·0 dwts. over a stoping width of 78 inches, is gratifying, and it may also be added that, like most of the mines in the Far East Rand, the actual values obtained in stoping are somewhat better than the blocks call for. The addition of five tube mills to the crushing plant, with the necessary classifying cones and tables, is now complete. The two skip inclines at the northern section, and the two electric trains in the bottom tunnels at the southern section, are now in operation, and the main features of the lay-out and development of the property may now be said to be completed. There is a large number of points of attack, and given the necessary amount of labour it would be a comparatively simple matter to increase the ore reserves to almost any desired extent. The average number of natives employed underground was 4,907 compared with 4,892 in 1917. The maximum number was reached in September when there were employed 5,368 natives. This figure, as a result of the epidemic, fell to 4,322 for December, and the fall in the output was a direct consequence. The efficiency of the native labour force, and of the underground work generally, showed a steady

improvement throughout the year, there being a substantial increase in the fathoms mined and the tons hoisted. There is still a considerable quantity of stores in stock, and an early relief from the increased costs under this head must not be looked for. The general outlook, however, for this mine has never been so promising as at present, and when an adequate number of natives is available there is every reason to anticipate further improved returns. It is with much regret that I have to record the death of your manager, Mr. E. G. Sudlow. Mr. Sudlow had been in bad health for some time, and was granted six months' leave of absence in March. Since that time Mr. M. J. Turner has filled the position of acting manager, and has now been appointed manager of the mine.

VAN RYN DEEP.

In his report for 1918, Mr. W. L. White, the consulting engineer of the Van Ryn Deep, writes:—The following figures give the comparative results over the last four years: Tons milled, 1915 508,710, 1916 532,150, 1917 517,870, 1918 530,550; yield per ton, 1915 37·369s., 1916 39·399s., 1917 43·636s., 1918 43·841s.; working costs per ton, 1915 17·031s., 1916 17·777s., 1917 19·537s., 1918 20·579s.; profit per ton, 1915 20·338s., 1916 21·622s., 1917 24·099s., 1918 23·263s.; total working profit, 1915 £517,308, 1916 £575,314, 1917 £623,991, 1918 £617,084; footage driven, risen and sunk, 1915 14,056, 1916 15,644, 1917 16,426, 1918 12,441; ore reserves (tons), 1915 2,044,108, 1916 2,168,851, 1917 2,258,598, 1918 2,445,759; value (dwts.), 1915 8·4, 1916 8·7, 1917 8·9, 1918 9·0. The year's results show a slight decrease on those for the previous year, the working profit being £617,084 against £623,991 for 1917. The chief reason for the slight falling off in profit when compared with the previous year is to be found in the increase of working costs from 19·537 shillings per ton to 20·579 shillings per ton. This increase is chiefly in the item "Mining," which shows an increase of 1·209 shillings per ton over the figure for the previous year. Native labour employed underground has averaged 2,567, which is an increase of 119 over the figure for 1917. The addition to the reduction plant, bringing the capacity up to 54,000 tons per month, was completed by the middle of the year, but unfortunately the native labour supply has not been nearly sufficient to mine the necessary tonnage. The ore reserve at 2,445,759 tons of a value of 9·0 dwts. over a stoping width of 70 inches must be considered very satisfactory. The ore mined during the past year was slightly higher in value than the average of the ore reserve, but with a return to more normal conditions and costs there should be no difficulty in making handsome profits on average grade ore. With the shortage of labour there has been no opportunity for further exploratory work on the western side of your property, but in the central and eastern sections the reef exposures have been most satisfactory. The mine is well developed, and the facilities for economical working are in every way excellent. With shafts, pump stations and ore bins completed, or practically completed, the working of this mine is now perfectly straightforward, and given an ample labour supply, excellent results are practically assured for many years to come.

NEW STATE AREAS.

The consulting engineer's annual report states:—My report of the 14th November last, which was submitted to the first ordinary meeting of shareholders on the 27th November, gave full information of the work which had been carried out on the mine up till the end of October. Since that time shaft sinking has been suspended to permit of the erection of the permanent hoists and headgears. It

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is hoped that the work will have progressed sufficiently to enable sinking to be resumed at the south shaft in February, and at the north shaft in March. The shaft depths at the end of the year were as follows: North shaft, 145 feet; south shaft, 103 feet. The question of connecting the property with a railway siding from Springs Station is at present under consideration. Your former manager, Mr. D. H. Thacker, has resigned, and Mr. M. J. Turner, of the Government Gold Mining Areas, is acting as manager *pro tem*.

WITWATERSRAND G.M.

The consulting engineer's annual report states:—Results on this mine have not been so satisfactory as in former years. As compared with 1917, costs have risen from 17,297 shillings to 19,264 shillings per ton milled, whilst the grade has fallen from 24,889 shillings to 23,179 shillings per ton milled. There has been a considerable drop in the tonnage milled, due partly to the labour supply being inadequate for the requirements of the property, and partly to some falling off in the efficiency of the underground labour force. The ore mined from stopes has been of good grade, but the quantity has been so much below normal that, when diluted with rock from reclamation and development, it has meant a serious fall in the grade of the ore milled. The development of the lowest levels of the mine has recently been encouraging, and the average results for the year gave 11.7 dwts. over a reef width of 40 inches, with a payability of 56 per cent. The ore reserves have been revalued, and now stand at 1,390,000 stopping tons of a value of 6.0 dwts. over 71 inches. The mine, more particularly the deep level section, is well equipped for the expeditious and cheap handling of a big tonnage, and with better conditions generally, and particularly with a larger supply of native labour, the mine should show an improvement on recent results in the near future.

NEW UNIFIED MAIN REEF.

The consulting engineer's annual report states:—The year's operations at the New Unified mine resulted in a gross profit of £28,059. This was £18,707 less than the profit for 1917, the causes of the decrease being a rise of 1s. 5d. per ton in working costs, a drop of sixpence per ton in the grade, and a decrease of 14,010 tons in the quantity of ore milled. The rise in working costs has been general throughout the Rand owing to war conditions, and does not call for any special explanation. With regard to the lower grade, this was due to the smaller percentage of Main Reef Leader mined. The payable ore reserves were re-calculated at the end of the year, and are now estimated at 180,840 stopping tons, having an assay value of 6.5 dwts. over a stopping width of 46 inches. It will be seen that there has been a considerable depletion of the reserve during 1918. In addition to the above tonnage there is still a quantity of Main Reef which will repay the cost of mining, and there is also some low-grade ore developed which with the higher working costs is at present under the pay limit. Any substantial reduction in costs is not likely to occur in the immediate future, but if the reduction should come about within the next year or so, it would tend somewhat towards the extension of the life of the mine.

NEW PRIMROSE.

The consulting engineer's annual report states:—The company succeeded in making a small monthly profit throughout the year, notwithstanding the big increase in working costs, which at this mine amounted to 2s. 6d. per ton milled. There was an increase in the yield of 2s. per ton, which was due partly to cleaner mining and partly to the better values obtained in the May Deep and May Consolidated sections. The gross profit amounted to £13,377, which was £6,343 less than that for the previous year. A small tonnage of payable ore was developed during the year, but there was a considerable depletion of the payable ore reserve, which is now estimated at 65,690 stopping tons, having an assay value of 6.1 dwts. over 49 inches. In addition to this, there is a large tonnage of ore the value of which cannot be fully ascertained and which has been

classified as "doubtful." An improvement in the yield cannot be looked for, but the probabilities are that the mine will continue to make a small profit throughout the year.

LANGLAAGTE ESTATE.

The consulting engineer's annual report states:—Early in the year this mine suffered severely from the heavy floods. Shaft sinking and development were stopped, and work restricted to the upper levels, for the most part on a double shift basis. Heavy expenditure was incurred in baling the water, and the general dislocation of the work was reflected in increased costs and reduced profits. Subsequently, and apart from a slight falling off in the last two months of the year, due to the influenza epidemic, the monthly results substantially improved. Development results during the year have been good. The reef exposed has averaged 25.9 dwts. over 14 inches, with a payability of 65 per cent. The ore reserves have been re-calculated, and are now estimated at 1,036,200 tons of a value of 6.9 dwts. over a stopping width of 52 inches. During the year opportunity was taken to purchase 22 claims belonging to the New Era Company, and comprising a compact block adjoining the south boundary of your property. The purchase price was £600 per claim, and the shareholders are to be congratulated on the acquisition of this ground, which should add about two years to the life of the mine. As a whole, the work of the past year has been excellent. Profits were quite up to expectations, and, but for the heavy handicap occasioned by the floods and the epidemic, they would have been considerably better. For the current year the prospects are good, and, provided normal conditions prevail, results should show an improvement on those for 1918.

GLENCAIRN MAIN REEF.

The consulting engineer's annual report states:—All mining operations ceased at the Glencairn property in November, 1918, owing to the payable ore reserves having become exhausted. Now that the mining and milling of reef has stopped, it is intended to enlarge the scale of treatment of accumulated slime, of which there remain about 190,000 tons of an estimated value of slightly over 2 dwts. The necessary alterations are being made to the current slime plant to permit of its use for the treatment of accumulated slime, and arrangements have been made with the Victoria Falls Power Company to enable the whole of the plant to be operated by electric power. It is hoped that the alterations will be completed during the month of February, after which it should be possible to treat about 7,500 tons of slime per month at a small profit. Every effort is being made to dispose of the surplus stores to the other mines of the group, and the sale of such portions of the plant as are no longer required is also receiving careful attention.

CONSOLIDATED LANGLAAGTE MINES.

The consulting engineer's annual report states:—It is disappointing to have to record a further fall in the tonnage milled and profits obtained for the year 1918. Shortage of native labour is the principal reason for this, but the position was greatly aggravated by the heavy floods at the beginning of the year, and the very serious influenza epidemic which visited the Rand towards the end of the year. These visitations did not have quite as bad an effect on this mine as on some others of the group, but even here a great amount of disorganisation was caused, and, under the circumstances, the profit earned must be considered satisfactory. Shaft sinking was suspended at the time of

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

the floods—the three lowest levels being flooded out—and the native labour position has never been strong enough since to enable us to recommence this work. Development has shown a distinct improvement during the past year, especially on the Main Reef Leader; the payable reef developed, however, is rather more patchy than could be desired. The ore reserves have been recalculated, and are now estimated at 2,103,000 stoping tons having an assay value of 6·2 dwts. over a stoping width of 51 inches. Shareholders may congratulate themselves that throughout a year fraught with difficulties the company has been able to keep up its development and maintain such a strong ore reserve position. The shafts are well ahead of the mine's requirements, and it is hoped that labour will soon be available to restart this work and enable us to explore the area of the water-right recently acquired from the Government. This area consists of a solid block of 61·53 claims extending across the property and completely cutting off the southern portion of the company's ground. These claims were acquired from the Government under the terms laid down for the disposal of Bewaarplaatsen claims, and which in this case amounted to a 3·217 per cent. interest in the company's profits as from the 1st January, 1917. At the moment the outlook for the current year is not too clear, but as the present stock of stores purchased at high prices are gradually used up, and other war charges become less, working costs should show an improvement, provided always the native labour supply is sufficient.

THE GINSBERG.

The consulting engineer's annual report states:—The mine, in common with most of the outcrop mines on the Rand, suffered considerable loss through the heavy rain storms which marked the first quarter of the year. Operations were conducted at a loss over a period of months, and it was not until the second half of the year that much improvement was noticeable. The gross profit only amounted to £5,599, which is £10,504 less than that for the previous year. The ore reserves were steadily depleted during the year, and the re-calculation which was made at the end of 1918 showed that there remained in the mine 59,194 stoping tons having an assay value of 5·7 dwts. over 51 inches. It is estimated that this tonnage will be exhausted during 1919, and in view of the existing high working costs only a small profit can be expected.

The Electrical Market in South Africa.

In the course of an article on "South Africa's Great Market for Electrical Equipment," the *British and South African Export Gazette* says:—"That the market in South Africa for machinery, cables, fittings, and other material for electric light and power purposes is one which is well worth looking after may be judged from the fact that for a recent five-year period the average annual value of such imports, exclusive altogether of telephone and telegraph cable and wire, amounted to as much as £1,086,340. It is all the better worth looking after now that Germany is unlikely to be able to compete for many years to come on anything like the old favourable terms of the past. Great as the strides are which have been made in electrical development throughout the Union, Rhodesia, and British and Portuguese East Africa, it is even yet only in its infancy, and when railway electrification is seriously taken in hand in the Union, as it seems certain to be at no very distant date, and the large new industrial equipments already projected are permitted to be undertaken, the plant and material for which an urgent need will have been created must represent very much more in annual value than the gross total of all the electrical imports which South Africa has in the past drawn from other parts of the world. Relatively small as the beginnings which have been made may be rated, however, there are to-day scattered throughout South Africa no fewer than 53 plants, each busily occupied in supplying electricity either for power, lighting, heating, or cooking." The writer goes on to give a summary of the principal electrical systems serving the mine districts and the larger cities.

New Patents.

- Stewart Alexander Rogers.—Improvements in and relating to elevated cable ways and systems of traction thereon.
 William Elder.—Improvements in discharge screens for tube mill and the like.
 Robert Illemaun and John Alexander Montgomerie.—An improved paint.
 Alfred Gilbert.—Improvements in the manufacture of book files for cards and the like.
 Aktieselskapet Vulkanlaer-Industri.—Improvements in and relating to the treatment of vulcanized fibres.
 John Westgate and Charles Edmund Hensley Hawken.—Improvements in or in connection with railway wagons and like vehicles.
 Henry Warburton and Frederick Charles Fairholme.—Shock-absorbing cam mechanism for stamps for ore crushing and other purposes.
 Percy de Haas.—Improvements in or relating to disc-talking machines.
 Dirk Andries Yenge.—Improvements in rail-fastening devices.
 Charles Hosking.—A new and original invention for applying brake-power to all two-wheeled conveyances.
 Charles Baxter.—Novel machine for the combined action of heating, steaming, drying and cooling of grain.
 William Stocks.—New or improved composition of matter for use in lieu of leather or for other purposes and method or process of manufacturing same.
 George Edwin Rigby.—Improvements in spring frames for cycles, motor cycles and the like.
 Jean Wingen.—Body paint or the like, and process for manufacturing same.
 The Allies Electric Lamp Co., Ltd.—Improvements in machines for cutting the globes of electric incandescent lamps.
 Humphrey Gas Pump Co.—An improved method of pumping and pumping apparatus for use therewith.
 Jan Hendrik Poppink and John Cornraad Biscoff.—Mechanism for the transmission of motion.
 Harry Clement Ritchie and Moritz Kahn.—Improvements in reinforced concrete construction of ships, floating docks, pontoons, and the like.
 James Logie.—An improved method of constructing roofs of circular buildings, such as Rondavels and the like.
 Alfred Arthur Quick.—Improvements in devices for hauling or straining purposes.
 Jan George van der Schyf and Jacobus Scheepers.—An invention for the production of power by means of its own motion.

Standard Bank of South Africa, Ltd.

The Standard Bank have received cable advice that, subject to the audit, the directors have resolved to recommend to shareholders at their meeting on 30th proximo a dividend for last half-year at the rate of 14 per cent. per annum, and a bonus of 2s. 6d. per share, both subject to British income tax, making total distribution 16½ per cent. for 1918; to appropriate £50,000 for writing down bank premises; adding £40,000 to the officers' pension fund, and £200,000 to the reserve fund making it £2,200,000—carrying forward about £200,000. The bank's investments stand in the books at less than market value at 31st December last, and all other usual and necessary provisions have been made. Immediately after the general meeting an extraordinary general meeting will be held, at which the board will submit to shareholders proposals to increase the bank's authorized capital to £10,000,000 for issue as and when required.

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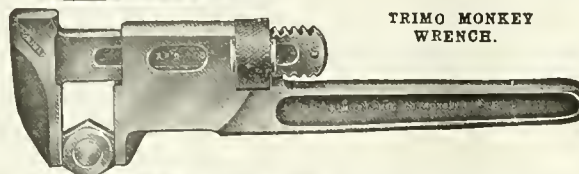
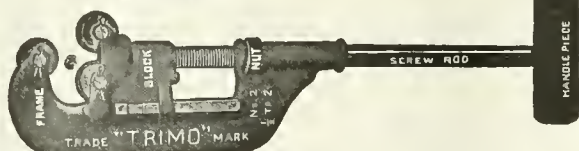
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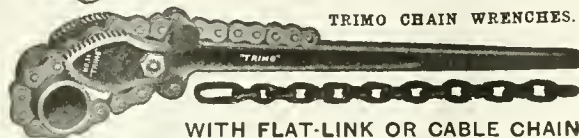


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THE POSITION OF THE RANDFONTEIN CENTRAL.

Mr. W. L. White, consulting engineer of the Randfontein Central, in his annual report for 1918, writes as follows:—

Apart from the general increases in costs common to all mines in consequence of the war, the year's work on this property has been attended with more than ordinary difficulty. Early in the year the floods had a disastrous effect on the tonnage milled and profits. All sections were flooded, and, in the case of the Block A and Mynpacht sections, it was well on towards the end of the year before the trouble was overcome. Native labour throughout the year has been below the mine requirements, which are estimated to be in the neighbourhood of 17,000 natives. The average number employed during the year has been 16,279, and for December the number fell to 13,114. This shortage is largely responsible for the reduced tonnage milled, increased costs, and shortfall in profits, as compared with the previous year. There have been several strikes during the year, causing very considerable dislocation of work and consequent loss of profits, and for the latter part of the year the influenza epidemic had a very serious effect on the results. The increases in costs directly attributable to the war were as follows for the month of November, 1918: (1) Increased cost of stores as compared with pre-war prices, £14,318, or 2·153s. per ton milled; (2) active service allowances, £1,762, or 264s. per ton milled; (3) war bonus and increased wages, £5,003, or 753s. per ton milled; (4) gold realisation charges, £1,143, or 172s. per ton milled; total, £22,226, or 3·342s. per ton milled. In the last annual report, the condition of the underground engine chambers on the north section was referred to. These, and the vertical shaft at the Robinson section, have been a trouble and expense throughout the year; but perhaps more serious is the state of the sub-incline shafts at the South and Robinson sections, where considerable movement and crush are now taking place, not only making the upkeep difficult and expensive, but tending to interrupt the general work of the sections. In view of the state of these old shafts, it is satisfactory to record excellent progress in the two new vertical shafts put in hand in August, 1917. These shafts at the year end had reached a depth of 2,057 feet in the case of the north vertical, and 2,111 feet in the case of the south vertical. At the 2,500 feet level in the north vertical the first station will be cut, and the main pumping plant installed. When completed and connected up, this central pumping plant will handle in one lift all the water making from the Porges to the Mynpacht sections—a distance of three miles on the strike of the reef—and needless to say considerable economies are anticipated from this installation. During the year the general development scheme has been revised, as a result of the heavy and increasing amount of pressure encountered in the lower levels, and the difficulties due to the steep dip and narrow reef width in such circumstances. It is now proposed to drive all levels on lines well in the footwall of both the Randfontein Leader and the West Reef, and to tap the reefs by means of cross-cuts which will be served by mechanical transport. This arrangement makes the concentration of water at one central point a simple matter, and promises well both in the matter of a saving in costs, and of a cleaner ore product—the waste broken in development being largely eliminated. The ore reserves have been re-estimated, and now stand at 4,254,000 stopping tons of a value of 6·8 dwts. over a stopping width of 50 inches. It should be mentioned that the higher working costs necessitated the exclusion of a large tonnage of low-grade rock from the reserves. The results for the past year are a great disappointment, and it is to be hoped that during the present year fortune may be more favourable to the company's operations. The future of the property is very largely centred in the progress of the two new shafts, and until these are in operation the normal working of the mine is bound to be expensive, as well as subject to more or less serious interruption from time to time. The exposures in development as given in the manager's report are quite satisfactory as regards reef width, value and percentage payability. Native labour at the moment is coming in fairly well, and provided there is a cessation of the labour

troubles and strikes, which have been so unfortunate and expensive a feature on the past year's working, results for the coming year should improve.

MANAGER'S REPORT.

In the course of his annual report, the manager, Mr. G. H. Beatty, writes:—The maintenance of most of the present working shafts is a constantly increasing item of expenditure and difficulty. The condition of some of the shafts, notably the verticals and sub-inclines serving the Nos. 3, 4 and 5 (South, North and Robinson) sections is extremely bad and gives cause for anxiety. These shafts have caused many delays during the year, and further trouble is certain, but no effort will be spared to keep them open until the new main verticals are in commission. The new engine chamber, etc., for the No. 4 (North) sub-incline has been completed, and an engine is being transferred from the old sub-incline of the No. 7 (Mynpacht) section. The main compound shaft of the No. 7 (Mynpacht) section, which was an inadequate and expensive item, has been eliminated, and the new scheme of connecting the sub-incline directly with the surface has been completed and put into operation. The No. 2 sub-incline has reached its ultimate depth, and very little sinking and equipment remain to be done in shafts Nos. 3, 4, 5 and 6. All these shafts would have been completed early in the year but for the floods in February and March. All the remaining ground in these sections (Nos. 2, 3, 4, 5 and 6) will be served by the two new main verticals, in conjunction with a new method of development. During the year 52,210 feet of development has been done, of which 29,442 feet has been driving on reef, 4,783 feet of crosscutting and the balance rising and winzing, etc. As usual the driving has exposed reef of consistent value, showing 83 per cent. payability. Randfontein Leader (South Reef of the Main Reef series) has given 89 per cent. payability with an average value of 29·1 dwts. over 13 inches. West Reef (Main Reef of the Main Reef series) has given 79 per cent. payability with an average value of 22·4 dwts. over 18 inches. An interesting discovery occurred in No. 9 section. In the past the Randfontein Leader had not been recognised as such, but had been locally termed the "Big Pebble Reef." Upper bodies of this reef had been mistaken for the West Reef. Crosscuts were therefore driven into the footwall and the true West Reef located. 6,165 feet of development has been done on this reef, showing 60 per cent. payability with a value of 11·8 dwts. over 28 inches. A commencement has been made upon an entirely new method of development in the area Porges—Block A (Nos. 2 to 6 sections) inclusive. The method has been designed with a view to eliminating the faults and limitations of the old method, and taking full advantage of such favourable conditions as exist. Mining ceased in the No. 7 (Mynpacht) section in November because the development and shaft sinking had got very much behindhand, on account of the lower levels being flooded since February. The bottom levels were recovered in December and shaft sinking commenced. The Randfontein Leader and West Reef have produced 75·62 per cent. of the tonnage stoped. The East Reef series has produced a quantity of low-grade ore, and

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the reefs known as the Wide and New Reefs of Nos. 8 and 9 sections have given a small tonnage. The tonnage obtained from stopes, development and reclamation was in the following quantities and proportions: Stope rock, 1,461,584 tons, equal to 83.72 per cent.; development, 140,769 tons, equal to 8.06 per cent.; reclamation, 141,304 tons, equal to 8.09 per cent.; surface dumps, 2,243 tons, equal to 0.13 per cent. The stope rock was almost entirely broken by means of hand stoping. Towards the end of the year a number of jack hammers was started in stopes with encouraging results. The stoping width was 50 inches for the year. The pumping plant failed lamentably to cope with the water due to the rains of February and March. The plant, which consists of over 100 comparatively small, low lift electric three-throw pumps and some air pumps, has at any time only a small margin of safety, with the result that the phenomenal wet season caused the flooding of the bottom levels of all the sections. It was many months before these levels were recovered, and not until December in the Nos. 6 and 7 (Block A and Mynpacht) sections. The ventilation of the southern mines was only fair in the early part of the year owing to the large surface fans being unsuitably situated. Fans were installed underground in the Nos. 2, 3 and 4 sections with excellent results, and two of the surface fans put out of commission. An average of 1,549 white men has been employed during the year—697 on the surface and 852 underground. Labour troubles have been frequent, and three strikes have occurred, causing considerable loss to the company. The average number of natives employed was 16,279. The deaths from sickness were 374—22.97 per 1,000 per annum, and the accident death rate was 2.89 per 1,000 per annum, a drop of 28 per cent. on the previous year. Labour became extremely scarce in the latter part of the year and the complement had dropped to 13,500 in December. The year has been one of continuous difficulty and poor results. The floods in the early part of the year were a disaster, and disorganised operations to a very serious extent throughout the year. White labour troubles have been constant and have had an unsettling effect all round. In September and October the mine was severely hit by the influenza epidemic, and a subsequent extreme shortage of native labour limited operations to the end of the year. Shaft troubles have also been the cause of several serious delays.

Industrial Census Statistics.

The second annual census of factories and productive industries, covering the business year 1916-17, has been published in the form of a statistical blue book. The number of such establishments in the Union was 5,305, an increase of 1,307 on the number returned in the previous year. The total capital invested amounted to £51,106,967, an increase of £4,574,217 on the year 1915-16. The number of employees in factories and industries was 123,842, of whom 46,100 were Europeans. The total shows an increase of 22,664, and Europeans of 6,576. The salaries and wages paid to employees in the year was £10,436,694, an increase of £1,523,837. Of the total amount, the Europeans received £7,760,674, an increase of £1,020,708. The value of the land and buildings concerned was £17,878,633, of which £10,719,888 represented actual ownership and the balance rented properties. The total was an increase of £2,101,396 on the previous year. The value of the materials used was £28,023,948, of which £13,731,251 was expended on South African products, and the total value showed an increase of £5,708,351 on the 1915-16 figure. The value added to materials by the process of manufacture or treatment was £21,432,466, an increase of £3,314,171. The number of industries in the Cape Province was 2,544; in Natal, 768; Transvaal, 1,618; and Free State, 375. The capital invested in the Provinces was:—Cape, £16,651,231; Natal, £11,205,114; Transvaal, £20,979,269; and Free State, £2,271,353. The Europeans employed in the different provinces numbered:—Cape, 17,716 males, 2,919 females; Natal, 6,582 males, 713 females; Transvaal, 11,806 males, 1,339 females; and Free State, 1,833 males and 192 females. The salaries and wages paid to the white employees in the Cape factories and industries amounted to £2,382,619 out of the total £3,544,663; in Natal, £1,389,339 out of £1,988,176; in the Transvaal, £3,667,636 out of £4,500,576; and in the Free State, £321,080 out of £403,279.

Witwatersrand Agricultural Society.

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THE OUTLOOK FOR THE JUPITER.

THE report of Mr. C. D. Leslie, consulting engineer of the Jupiter G.M. Co., Ltd., for the year ended December 31, states that the shorter hours of work underground which came into force on 1st January, 1918, together with a reduction of 5.75 inches in average stoping width as a result of careful mining, have been largely responsible for the reduced tonnage output, notwithstanding an increase of 169 in the average number of natives employed as compared with the previous year. The rise in working costs of 4s. 0.846d. per ton crushed is due principally to the conditions referred to above and to the higher cost of mine supplies. Of the increase of 2s. 4d. in the average revenue per ton, 4.128d. is accounted for by the inclusion from reserve of 1,100 ozs. of gold, valued at £4,583 6s. 8d. Taking all the circumstances into consideration, great credit is due to the management for the effort made to work the mine economically and to the best advantage. The reserve at the Howard shaft section is estimated at 674,000 mine tons of fully developed ore of an average value of 5.98 dwts. per mine

ton, and 76,000 mine tons of partially developed ore of an indicated value of 5.7 dwts. per mine ton. Owing to the further increase in working costs some 154,000 mine tons of ore have been eliminated as unprofitable under present conditions of working. The "heavy" character of the rock encountered in the Howard incline shaft was such that it was considered unsafe to continue the sinking of this shaft, from the 11th level of which a crosscut is being advanced in a south-easterly direction to a point beyond the "Treasury" dyke, where it is proposed to sink a sub-vertical shaft to command the deeper ground. A more plentiful supply of native labour and more favourable economic conditions are required to increase the output and lower working costs, so as to improve the present perilously small margin between the recovery value of the ore treated and working costs, which in the future must be expected to bear the cost of the higher rate of development required to add to the reserve of ore. Your superintending engineer and myself wish to express our appreciation of the excellent work of the management during the year.

THE POSITION OF THE SIMMER DEEP.

THE consulting engineer's report on the Simmer Deep for 1918 states:—The shorter hours of working which came into force on 1st January, 1918 coupled with a decrease of 63 per cent. in reclamation tonnage and a reduction of 145 in the average number of natives at work as compared with the previous year had the effect of greatly reducing the tonnage milled. The resulting increase in the cost of working was considerably more than the improvement in grade which was effected, so that the result of the year's working was a loss of nearly £28,000, after taking credit for the value of 640 ozs. of gold equal to £2,666 13s. 4d. taken from reserve. Working costs were higher by 3s. 2.42d. per ton chiefly as a result of the circumstances referred to together with the higher cost of mine supplies and the disorganisation and loss of labour through the influenza epidemic. As compared with the previous year the actual recovery was higher by 1s. 1.8d. per ton milled, the average recovery value for the last nine months being 2s. 3.7d. higher than for the first three months of the year. Excluding 225,000 tons of low-grade ore, which have to be classed as unpayable under existing working conditions, the ore reserve is estimated at 932,000 fully developed mine tons of an average value of 5.02 dwts. per ton, and 42,000 partially developed mine tons of an indicated value of 5.15 dwts. per ton. The lower development continues to expose

ore of a grade above the average value of the ore reserve, and on account of the favourable showing in this direction the rate of development would have been increased considerably if money had been available for this purpose. The prospects of the mine are dependent on increasing the reserve tonnage and grade, a more plentiful supply of native labour to permit of operating on a scale more closely approximating the capacity of the reduction works, and economic conditions more favourable to a partial return towards the pre-war level of working costs. The disappointing working results referred to have necessitated the provision of fresh working capital to enable the mine to tide over a few months in order to determine whether it would be possible to carry on profitable operations in the future, and sufficient funds for this purpose have been obtained by means of an issue of prior lien debentures guaranteed by the Consolidated Gold Fields of South Africa, Ltd. Should encouraging results be obtained in the near future the full amount of the authorised issue of prior lien debentures would doubtless be called for to provide expenditure which for efficient working would have to be faced in respect of incline shaft sinking and equipment, underground pumping equipment, increase in compressor capacity, maintenance of plant and equipment, etc. The superintending engineer and myself greatly appreciate the determined painstaking and skilful manner in which your manager, Mr. Macgregor, and his assistants have undertaken their duties during a particularly trying year.

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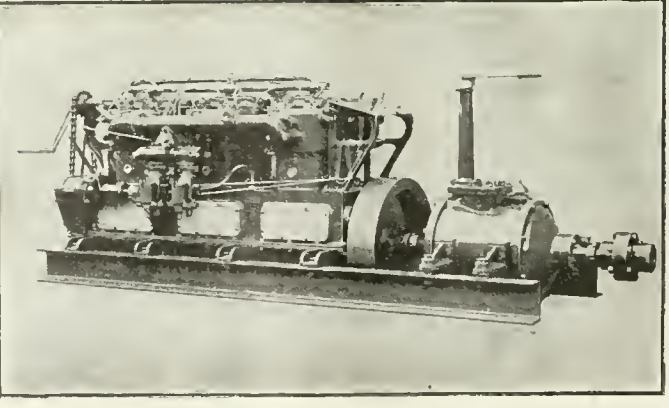
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WITWATERSRAND DEEP MARCH RESULTS.

A Chapter of Accidents but an Improved Return—Excellent Development Disclosures.

The operations of the Witwatersrand Deep, Ltd., for last month disclose several points of interest, and in view of the recent upward movement in the price of the shares the following extracts from the report of the new manager, Mr. Johns, will doubtless engage attention: The tonnage milled for the month was 32,700 tons, an increase of 5,100 tons as compared with the previous month. The yield was 5.446 dwts. per ton milled as compared with 5.679 dwts. for the previous month. The screen value was 5.754 dwts. per ton and the extraction 94.64 per cent. There was a loss on the month's working of £998, and this may be attributed chiefly to the following: (1) Influx of inefficient native labour. (2) Motor of rock-hoist burnt out, causing suspension of hoisting operations and stoppage of mill for two days. (3) Flooding of east shaft through bursting of pump column, delayed hoisting of rock and incurred considerable expenditure in overtime and stores. (1) 50 drill compressor broke down, and was idle for three days, causing serious loss in tonnage mined, and increase in cost of stores and labour. The working costs for the month amounted to £38,344, or 23s. 5.42d. per ton as against £35,508, or 26s. 1d. per ton milled for previous month.

DEVELOPMENT.

The development footage for the month was 375 feet, as compared with 393 feet for the previous month. The essential points in regard to recent development disclosures are as follows:—East shaft: 22nd level drive east was driven 36 feet, distance sampled 35 feet, value 12.4 dwts. over 39.0 inches. 22nd level drive west was driven 45 feet, distance sampled 45 feet, value 9.0 over 71.8 inches. 23rd level drive east was driven 45 feet, distance sampled 35

feet, value 8.5 dwts. over 68.4 inches. 23rd level drive west was driven 28 feet, distance sampled 40 feet, value 6.6 dwts. over 62.5 inches. 21st level west No. 2 winze was sunk 31 feet, distance sampled 35 feet, value 17.6 dwts. over 10.3 inches. 21st level east No. 1 winze was sunk 27 feet, distance sampled 15 feet, value 20.4 dwts. over 39.7 inches. 22nd level west No. 1 winze was sunk 36 feet, distance sampled 35 feet, value 11.1 dwts. over 39.1 inches. 22nd level No. 1 ore pass to 2259 stope was risen 3 feet. 22nd level No. 2 ore pass to 2259 stope was risen 2 feet. 23rd level crosscut for winch was driven 5 feet. 24th level crosscut from shaft was driven 30 feet. 23rd level east No. 1 winze was sunk 8 feet. West shaft: 18th level No. 1878 stope drive (Main Reef) was driven 28 feet, distance sampled 20 feet, value 11.7 dwts. over 70.0 inches. 18th level No. 1878 stope drive No. 1 winze (Main Reef) was sunk 26 feet, distance sampled 25 feet, value 10.0 dwts. over 37.0 inches. 1878 stope drive No. 1 raise (Main Reef) was risen 7 feet. South incline shaft: The south incline shaft was sunk 15 feet during the month. Cost of sinking was £323. Cost of equipment was £228. The cost of cutting stations was £52. The total cost of development, excluding cost of sinking, equipment of south incline shaft and cutting stations, was £1,129.

OTHER ITEMS.

The water pumped from the mine during the month was 8,275,000 gallons. 560 feet of the main pump column in the east shaft was renewed during the month. During March 25 stamps were dismantled, old foundations cut down and pile blocks drawn. Framing for new 20 stamps is nearing completion. Concrete gutter behind south side has been completed. In regard to native labour Mr. Johns writes: The native labour position continues to improve, and at date we have 74.089 per cent. of our underground complement, as compared with 68.04 per cent. for the previous month.

The S.A. Institute of Electrical Engineers.

In his valedictory address to the members of the S.A. Institute of Electrical Engineers, Prof. Dobson, the retiring President, said, *inter alia*:—

The membership of the Institute to-day is higher than it ever has been, and having regard to the very strenuous times through which we have passed, and that 20 per cent. of our total membership have been doing duty for King and country, this fact is testimony to the increasing usefulness of our Institute. During the year it was my pleasure, as President, to announce the award of the gold medal to Mr. Bernard Price for his paper entitled "The Electrical System of the Rand Power Companies, with Special Reference to Methods of Operation and Experience." The value of that paper is known to us all; and I am sure the Institute shares with me the pleasure that it has given us to award to Mr. Bernard Price the highest award of the Institute. During my year of office we have been fortunate in securing the Victoria Falls Power Company's premium. It is an excellent thing to offer inducements to members to come forward and give the engineering world the benefit of their special experience and expert knowledge in the form of papers and contributions. The particular feature of the Victoria Falls Power Company's premium is the great latitude which the donors have thought fit to hand over to the Council. During the past year we have had our fair share of papers. The Electrification of Railways attracted a considerable amount of attention and discussion, and we are all looking forward to the report which is being submitted to the Railways, and we can safely say that the efforts of this Institute proved a powerful incentive to the railway authorities to make exhaustive investigations. It is hoped that they may be induced to bring the electrification, at any rate of some portion of the railways, to a practical stage.

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PLATINUM METALS IN THE SOMABULA DIAMONDIFEROUS GRAVELS.

[By H. B. MAFFE, Director of the Rhodesia Geological Survey.]*

The Somabula diamondiferous gravels which contain the diamond and numerous gemstones are found almost on the main watershed of Southern Rhodesia close to Willoughby's Siding and about twelve miles south-west of Gwelo. An examination of the pebbles composing the gravels revealed the presence of chromite and chromite-bearing rocks in appreciable quantity; and therefore the possibility that the rocks might contain platinum or metals of the platinum group (iridium, osmium, palladium, rhodium, and ruthenium). The late Mr. Zealley in writing of the occurrence of platinum in Southern Rhodesia said:—"The Somabula gravel for instance is a likely source, since it is known that much heavy material is concentrated therein, and that a considerable proportion of the pebbles are from ultra-basic rocks; thus pebbles of chromite rock are abundant, and many of the chalcedony pebbles can be recognised by the practised eye as silicified serpentines derived from the Great Dyke and from the ancient schists. The fine heavy black gold-bearing sands concentrated from the Somabula gravels apparently have not been examined for platinum. The finest material should preferably be tested." A sample of the heaviest fine concentrate obtained in the washing for diamonds was sent to the Imperial Institute to be assayed for platinum metals. Under date 17th February, 1919, the Director of the Imperial Institute reports the following results:—Platinum, 3 ozs. 12 dwts. per ton of concentrate; osmiridium, 7 ozs. 0 dwt. per ton of concentrate. He also reports:—"Palladium was probably present, but the quantity was too small to be definitely identified. The

concentrate also contained a large amount of gold." Osmiridium is a native alloy composed chiefly of osmium and iridium, and is used chiefly for tipping gold pens and for bearings in watches and compasses. The most recent price quoted for platinum is 400 shillings per oz. troy. Osmiridium usually commands a higher price, but as the supply does not meet the demand, the price is a matter for negotiation. As Russia has hitherto supplied about 90 per cent. of the world's output of platinum, and as this supply is now much reduced, if not altogether cut off, the shortage is likely to be serious. The Director of the Imperial Institute of the United Kingdom, the Colonies, and India, South Kensington, London, S.W. 7, wishes to receive information as to the quantity of concentrate available.

* Report No. 5 of the Southern Rhodesia Geological Survey.

We have been gratified to note that a considerable number of our supporters of pre-war days have recommenced to subscribe to the *S.A. Mining and Engineering Journal*. We welcome these old friends, many of whom have risked their all for their country, and the cause they believed to be right and just. We shall be pleased to aid them all we can, either to find fresh employment in the mining profession or to advise them as to their investments.

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THE MARCH GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of March:—

Company	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
City Deep ...	a154	10	50,000	23,550	£29,368	27 9.3
Cons. Main Reef	220	6	50,110	17,610	8,636	26 0.4
Crown Mines ...	660	26	160,000	52,311	25,468	21 3.3
Durban Deep ...	100	3	27,700	9,601	2,708	27 1.8
East Rand Prop.	440	19	112,000	35,314	8,030	25 0.5
Ferreira Deep ...	280	7	37,000	13,726	10,289	25 6.9
Geldenhuis Deep.	300	7	53,100	14,441	1,651	22 2.7
Knight Central ...	120	3	19,100	6,036	*2,491	29 1.5
Modder B. ...	b104	8	54,000	29,212	63,024	22 5.5
New Modder ...	c236	15	88,000	43,712	95,168	20 0.7
Nourse Mines ...	180	5	40,600	13,523	3,175	26 7.2
Robinson ...	180	6	40,000	10,290	3,259	19 11.6
Rose Deep ...	300	7	54,000	14,244	9,570	18 7.1
Village Main R.	130	4	18,700	5,761	1,957	23 8.1
Wolluter ...	120	4	28,700	8,617	3,579	22 8.6
Village Deep ...	180	7	54,000	16,283	2,089	24 6.4

Tls. & averages 3704 137 887,040 314,267 265,480 23 9.4

a Includes 4 Nissen stamps. b Includes 24 Nissen stamps.

c Includes 56 Nissen stamps.

* Loss.

Knight Central, Ltd.—The loss of £2,191 was due to the strike of miners lasting four days, during which no ore was taken out of the mine. Operations were also affected to a small extent by accident to hoisting engine.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of March of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs	Total Profit
Simmer and Jack ...	320	7	41,700	11,614	£632
Robinson Deep ...	110	8	41,200	14,053	3,306
Knights Deep ...	400	11	88,200	17,933	1,101
Simmer Deep ...	220	10	40,600	9,804	*7,427
Jupiter ...	80	5	24,400	6,300	*1,277
Sub Nigel ...	30	2	9,400	5,887	6,024
Totals ...	1160	43	251,500	65,591	£2,359

* Loss.

Gold Reserve.—Simmer and Jack, 300 ozs.; Sub Nigel, 2,910 ozs.; total, 3,210 ozs.

Simmer Deep.—The abnormal loss is due to accidents and water trouble in the Milner shaft, which resulted in a reduction of high grade ore tonnage going to the mill from the lower levels of that section. It is expected that normal conditions will be resumed at this shaft about the 15th instant.

New Heriot.

The following is the result of the operations at the New Heriot for March:—Ore milled, 11,190 tons; gold recovered, 3,958 ozs.; profit, £1,167.

Union Corporation.

Results of operations on the producing mines of this group for the month of March:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	13,500	£62,779	28 10
Modder Deep Levels ...	70	42,800	88,878	11 6
Princess Estate ...	60	21,500	27,716	25 9
Totals ...	230	107,800	£179,373	—

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£41,662	19 2	£21,117	9 8
Modder Deep Levels ...	37,645	17 7	51,233	23 11
Princess Estate ...	30,650	28 6	*2,934	2 9
Totals ...	£109,957	—	£69,416	—

* Loss.

Consolidated Mines Selection Group.

The following are the results of operations for the month of March:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines ...	110	51,500	24 6.693
Springs Mines ...	80	37,350	25 2.069

Totals and averages ... 190 88,850 24 9.792

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines ...	£93,960	35 5.873	£30,724	11 11.180
Springs Mines ...	70,738	37 10.542	23,729	12 8.473

Totals & averages £164,698 37 0.879 £54,453 12 3.087

Springs.—The reduced profit is due to a fall in grade of some of the principal stopes combined with an increase in working costs.

Albu Group.

The March operations of the producing mines of this group were as follows:—

Company	Tons Crushed.	Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	15,000	£16,042	21.39	£15,572	*£470
Meyer & Charl.	14,000	16,290	23.27	38,798	22,508
New Goch ...	15,500	14,209	18.33	13,568	*6.11
Roode, United.	25,100	25,130	20.02	22,168	*2,962
Van Ryn Est...	34,000	28,902	17.00	33,409	1,507
West Rand Con.	32,800	36,362	22.17	37,657	1,295

136,400 £136,935 20.08 £161,172 £24,237

* Loss.

Roodcpoort United.—The revenue was adversely affected by the lower grade of the ore mined from certain of the stopes in the Kimberley East section. A slight improvement has since taken place.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of March:—Tons crushed, 3,770, yielding 1,374 fine ozs.; estimated value of month's output, £5,717; estimated profit for the month, £310.

REPORT OF THE AMERICAN COMMITTEE ON GOLD.—III.

Relief Measures Proposed by Gold-Mining Industry in Responses to Questionnaire.

FREE EXPORT AND SALE OF GOLD.

Gold has been sold in England at 115 shillings per ounce as against 85 shilling per ounce paid by the Bank of England for coinage purposes, and the Government found it necessary to prohibit the melting of coins. Gold, under present conditions, could be also sold at a premium in this country for use in industrial arts, and if a free sale of gold were now permitted a certain amount could be absorbed at a considerable premium. A study of the market for gold shows that for the last four years about 45 millions per annum, approximately one-half the amount produced in the United States, went into manufactures. Dentists use a large part of this gold and could pay a higher price for it, as could also jewellers. The amount of old material, jewellery, etc., that is consumed in manufactures in the United States has been approximately \$8,000,000 worth per annum, and new gold to the value of approximately 37 millions per annum is consumed in this manner. The amount that could be absorbed at a premium is not known and would depend to some extent upon psychological conditions. If it were thought that the price of gold would go higher, quantities would be bought for speculative purposes, unless restrictions were imposed. The following is of interest in regard to the sale of gold in the open market: "It seems to have been overlooked by many that the Mint price for gold (85 shillings, or \$20.67) is quite different from the market value or exchange value of the metal. Gold, as a commodity, has had this last month in England a value of some 35 per cent. in excess of the Mint price; the *Analyst* tells us that minted coins have been at a high premium because of profiteering by labour. Workers are receiving wages higher than ever before in their experience and there is a demand for jewellery which exhausts the supply of gold, the commodity. An ounce of gold in a jeweller's hands will make four rings, for which he will get at least \$30; in consequence, the market price of gold, in those countries in which gold has been commandeered, is nearly 50 per cent. above the Mint price. This is the fact that has led Sir Lionel Phillips and his committee to approach the British Government for permission to sell the gold produced by their mines in the 'open market,' that is, sell it as a commodity."[†]

FURTHER SUGGESTIONS.

In addition to the matter discussed above it is the opinion of this Committee that gold should be placed under authority of the War Materials Administrator. In that way Government assistance can be given gold mines where desirable as provided for in the War Minerals Bill for the other important metals included therein. It is also suggested that a thorough study be made of the gold-mining industry with a view to improving mining and metallurgical conditions and also to go thoroughly into the labour situation. It seems feasible for the Government, through the Bureau of Mines, to assist in improving methods of mining and metallurgy, particularly the latter, in the treatment of complex ores and those of low gold-content. A number of technical problems requiring solution may be mentioned. Among these are the regeneration of cyanide solution, the treatment of complex and refractory ores, the cheaper production of cyanide, and the recovery of by-products from tailings. The practical solution of a few of these problems might easily bridge the gap between failure and success in the operation of low-grade properties. That particular field of work has been almost untouched by the Government and the present action may be particularly opportune for planning adequate

work in that field. Efforts should also be made to extend co-operative buying of supplies by mining companies. A central agency could be established in each State or district for co-operating with those elsewhere and thus reduce costs. This would ensure not only the best prices, but the greatest consideration from firms dealing in mining supplies. It would naturally prove more beneficial to the smaller mines that do not maintain purchasing departments, and would to some extent ensure the larger mines better prices than they now obtain. Besides securing better prices great benefits would result from the distribution of knowledge, based on the experience of the larger users, as to the most satisfactory material to use for different kinds of work. Information of this kind could be properly discussed in a report on the gold mining industry by the Bureau of Mines.

CONCLUSION.

There is no doubt that the output of the gold mines of the United States is seriously falling off, and under present economic conditions still smaller returns must be looked for in the future. The cause of the decrease is not wholly due to war conditions, but also to the fact that some of the most productive lode and placer mining deposits are showing exhaustion without equivalent new discoveries taking their places. War conditions are a serious burden and bear with special weight on the gold-mining industry, in that as the prices of other commodities advance the purchasing power of gold necessarily decreases. The prohibition of exports of gold and the limitation of the circulation and internal trade in gold are injurious to the gold miner and justly entitle him to special consideration. The different aids that have been suggested are outlined in detail. The granting of a bonus, or bounty, has the greatest advocacy from the mine operators, but seemingly such a measure would net the Government only a very small percentage of increase in its present great gold reserve, and then only at great cost. The principle of the bonus appears to be in general economically unsound and its application might result in serious abuses. As a result of the war the United States has been transformed from a debtor nation into the great creditor nation of the world, and has the greatest gold reserve and best gold cover for its paper currency. Its credit, while undoubtedly the soundest, is still probably in need of gold backing for the reconstruction period, if this country is to make use of its advantage as a world power in trade. It must be remembered that we control only about one-fifth of the current output of the gold mines of the world and peace conditions may not prove so favourably for our holding our premiership as a creditor nation. The Liberty Loan bonds, with pledges for redemption on a gold basis, may amount to several times the total gold reserves of the world, and some provision must be made from time to time to pay at least a portion of them in gold as they fall due at the option of the holders. The various measures of relief asked for by the gold-mining industry, with the exception of No. 1, 4, and 6, could easily be granted by executive action without additional legislation. As the profit of a gold mine, no matter how large, cannot be ascribed to war conditions, and, in fact, is seriously handicapped on that account, the remission of this tax is a logical and just demand, and might well be considered. The free export and sale of new gold should be permitted not only because it will help the miner but also because it gives freedom of movement, thus preventing inflation. Intelligent relief to the most struggling and deserving of the gold mines might be obtained by amending the War Minerals Act to include gold mining and at the same time voting an appropriation that would be at the disposal of the Administrator to encourage gold discovery and aiding in the re-opening of mines shut down on account of adverse economic conditions. This we have pleasure in recommending.

[†] Bulletin, Canadian Mining Institute, October, 1918.

THE MARCH GOLD OUTPUT IN DETAIL.

Substantial Recovery—Increase of 75,651 Ozs.

THE gold output for March shows a gratifying increase. The total was 712,379 ozs., or 75,651 ozs. better than February, and 36,320 ozs. better than January. The March return, in fact, is the best for the past six months, and shows that if the industry can approach to ordinary working conditions, the output will readily be restored to normal figures. The native labour position is gradually improving, and the number of 175,620 working on the gold mines on the 31st March was an improvement of 3,261 on the February number. The aggregate figures of the output were:

Total output	712,379 ozs.
Value	£3,025,992
Increase	75,651 ozs.
Value	£321,345
Witwatersrand	694,825 ozs.
Value	£2,951,428
Increase	73,637 ozs.
Value	£312,790
Outside districts	17,554 ozs.
Value	£74,564
Increase	2,014 ozs.
Value	£8,555
Stamps	8,294
Increase	35

INDIVIDUAL RETURNS.

WITWATERSRAND.

	Value. £	Increase. £	Decrease. £
Aurora West	15,504	3,619	—
Brakpan	95,103	13,253	—
City and Suburban	25,474	1,037	—
City Deep	100,034	21,209	—
Cons. Langlaagte	56,074	6,660	—
Durban Deep	40,795	3,232	—
E.R.P.M.	150,004	15,546	—
Geduld Prop.	63,554	3,508	—
Geldenhuis Deep	61,341	10,827	—
Ginsberg	11,966	285	—
Government Areas	199,546	19,888	—
Jupiter	26,761	2,451	—
Knight Central	25,639	—	2,918
Knights Deep	76,175	7,863	—
Langlaagte Estate	55,131	6,214	—
Meyer and Charlton	39,368	5,582	—
Modder B.	124,085	8,394	—
Modder Deep	89,100	5,972	—
New Goch	14,200	1,516	—
New Heriot	16,813	2,660	—
New Kleinfontein	77,920	13,800	—
New Modder	185,677	16,834	—
New Primrose	16,502	1,185	—
New Unified	12,318	1,278	—
Nourse Mines	57,442	10,186	—
Princess	27,487	2,574	—
Randfontein Central	166,439	13,249	—
Robinson Deep	59,693	9,859	—
Roodepoort United	22,088	—	709
Rose Deep	60,505	1,754	—
Simmer and Jack	48,059	5,416	—
Simmer Deep	41,645	—	977
Springs	71,625	2,850	—
Van Ryn	33,689	2,090	—
Van Ryn Deep	105,632	10,640	—
Village Main	24,471	2,676	—
West Rand Consolidated	37,886	4,524	—
Witwatersrand	37,376	1,434	—
Wit. Deep	37,822	4,894	—
Wolluter	36,603	2,978	—
Bantjes	4,600	153	—
Crown Mines	222,861	38,913	—
Ferreira Deep	58,304	8,614	—

	Value. £	Increase. £	Decrease. £
Luipaardsvlei	20,687	—	263
Village Deep	69,166	9,537	—
Con. Main Reef	74,803	7,604	—
Robinson	13,709	1,852	—
Miscellaneous	7,752	—	2,753

OUTSIDE DISTRICTS.

Sub Nigel	23,643	—	756
Glynn's Lydenburg	5,811	—	327
T.G.M.E.	25,588	6,817	—
Barrett	1,070	195	—
Miscellaneous	18,422	2,626	—

LABOUR FIGURES.

The number of natives employed on the last day of the month by the W.N.L.A. and contractors was:—

On gold mines	175,620
On coal mines	11,168
On diamond mines	5,080

191,868

Barnato Group.

The results of operations of the Barnato group for March are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte	100	47,200	£56,072
Ginsberg	75	10,230	11,968
Government Areas	190	114,000	199,545
Langlaagte Estate	200	42,000	55,132
New Primrose	90	18,000	16,504
New Unified	60	13,700	12,318
Randfontein Central	600	143,000	166,437
Van Ryn Deep	90	50,000	105,632
Witwatersrand	215	35,100	39,378

Totals and averages ... 1620 ... 473,230 ... £662,986

February totals ... 1610 ... 427,660 ... £599,154

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit includ- ing Sundry Revenue.
Consolidated Langlaagte	£45,224	19.163	£11,023
Ginsberg	11,617	22.771	410
Government Areas	119,885	21.033	80,237
Langlaagte Estate	43,127	20.538	12,185
New Primrose	15,223	16.911	1,353
New Unified	10,258	14.975	2,095
Randfontein Central	155,417	21.736	11,848
Van Ryn Deep	52,176	20.870	54,117
Witwatersrand	34,855	19.860	6,041

Totals and averages ... £487,812 ... 20.616 ... £179,310

February totals ... £419,142 ... 21.004 ... £151,051

Monthly Gross Profit, 1919.—January, £162,913; February, £154,051; March, £179,310.

City and Suburban.

The following are details of the operations at the City and Suburban for March:—Tons milled, 16,159; gold recovered, 5,997 fine ozs.; loss, £5,758. The loss is due to shaft repairs and shortage of native labour.

THE PRIESKA NITRATES.

A Challenge to Germany and Chili—"This Monopoly is now Ended."

[By a Special Correspondent.]

A book of reports, analyses, sketches, and photographs has been issued by the South African Nitrate and Potash Corporation, Limited, a company registered to exploit the nitrate fields of the Cape Colony on and about the range of hills known as the Asbestos Mountains, through the occurrence and exploitation of blue asbestos there, and as the Gift Bergen or Poison Mountains, because the stock that drank of the "brak" or nitrated waters were dangerously purged.

Probably no great economic event was more unostentatiously chronicled than this entry of South Africa among those States whose resources and products dominate or deeply affect the economies of the world. South Africa controls the Diamond Market, of course, but the world could endure to live without this ornament of women. Our Gold has increased the industrial and agricultural output of men by providing credits for the employment of capital, and it is likely that the control of South African gold has had more to do with the changes in the Balance of Economic Power than students have observed. But gold is not a national monopoly, though it tends to be a Bankers' Monopoly; nor is gold an ultimate economic necessity.

Two great natural monopolies, probably the only considerable monopolies, have actually been the most potent factors in the works of peace and the conduct of war, have destroyed existing industries and created others, have determined the course of emigration, have fed and enriched the world and have made ready the means of destruction and have been used as weapons in the articles of Peace. These two monopolies, to wit the German monopoly of Potash salts and the Chili monopoly of Nitrate of Soda, are now challenged by a single enterprise in South Africa, which, in circularising its friends, states simply: "This monopoly is now ended."

Upon the potash salts of Germany was built up the extraordinary agricultural development which enabled the Central Powers to support the immense population of agriculturists who fed the army with men as well as with meat, and by increased use of Potash fertilisers, enabled them to discount the blockade. In peace this monopoly was the basis of the chemical pre-eminence of Germany. Of the Chili Nitrates, Professor R. Kennedy Duncan ("The Chemistry of Commerce") wrote:—

"European and American agriculture and a hundred varied kinds of industry are thus wholly and implicitly dependent upon a tiny strip of land in a South American Republic, and upon the grace of the 'Nitro Kings' who own it; and were the little Republic to close her gates of export, hungry months and insurrections would follow as infallibly as the night the day. This is, of course, embarrassing and highly significant of the interdepending conditions of our civilisation, but when we begin to estimate the amount of nitre taken out and the amount still remaining in the beds—and compare this amount with the crescendo ratio of the world's demand, we are more than philosophically interested—we are practically frightened. We see that what has happened to guano will inevitably happen to saltpetre. It is a matter of plain, hard, cold-drawn fact, as everybody now knows who knows anything about the Chili saltpetre-beds and the needs of agriculture, that these saltpetre beds will not last longer than twenty years, if present conditions continue. About the year 1925, then, there will be no more nitre, and a year or two after that, or before it, famine will stalk on the lands of civilised men. This is acknowledgedly true if present conditions continue."

Relief from the threatened world-famine, as promised by Sir Wm. Crookes, whose death we are now lamenting, and by the author just quoted, and by the Governments who have followed scientific advice, was to be found in the

artificial, though costly, fixation of atmospheric nitrogen. And here "in the nick of time," as Mr. O'Flaherty writes in the first paper of the Company's publication, "the recent discovery of the value and the magnitude of the South African Nitrates has relieved the situation."

Unhappily, but naturally, the South African does not look to his Government for guidance in such momentous affairs. It is hardly credible that a Select Committee of Parliament was persuaded, only two or three years ago, that the Pay Reef—whatever its name—of the Far East Rand, which now and onwards is and will be the leading gold-producer of South Africa, was a gamble more risky than the rest of the goldfields. Although all the evidence was in the Departmental pigeon-holes, it was the great Houses which led the way, and it is somewhat amusing to note that the London financial papers, which, taking their note from the South African authorities, were most depreciatory of Far East values then, can write, as the "Financial Times" wrote this week, of the "recovery of the world's greatest goldfield—a recovery which will most likely come from a further extension of the Far Eastern Rand."

As far as can be gathered by research and inquiry, the Government has not been at the pains to inquire for itself into the values of the Nitrates of the Cape Colony. The report by the Geological Survey leaves the word unmentioned, and this is the more remarkable since the collection of the native saltpetre, found as secondary crystallisations, has long been practised, and good prices received for this product. It would seem that Government officials and Mining Engineers, too, to whom these properties have been referred, have been content to accept the dictum of Dr. Marloth, who, as long ago as 1894, assigned the origin of the native saltpetre to animal excreta (chiefly dassie). Regardless of Dr. Marloth's concluding sentence: "The observations are so encouraging that further prospecting should be carried out, in the mountains as well as in their neighbourhood," his suggestion seems to have been taken as disposing of the whole matter—not only fixing the origin, but disposing of the quantity, which was *deduced* to be small, because of the hypothesis. This very unscientific method of treating so important a thing is repeated, for instance, in the "S.A. Journal of Industries" (June, 1918), where, in the first paper of a special series on "Fertilisers," Dr. Marchand, of the Department of Agriculture, dismissed the South African possibilities in a few cavalier sentences founded on the untested Marloth suggestion. It is true that the succeeding paper for July gave some striking analyses of "deposits containing Potassium Nitrate" which would tend to correct the former statements, but no comment is given, and the impression is left that the writer had received certain data which induced him to publish the analysis though he was not in a position to speak with any first-hand authority on the Nitrate fields.

This sort of treatment, the cold-shoulder and the contemptuous smile, was all very well while the private citizen was being frozen out for want of influential sympathy. But when a Corporation, equipped with capital, is ready to dispense with Departmental officials, provided with hearsay reports, the situation is changed. The Cape Nitrates can no longer be neglected.

Naturally, three leading tests will occur to everyone as determinants of the enterprise:—

1. Is there enough Nitrate there to justify a large capital and make a great industry?
2. Can it be extracted at a cost enabling it to compete in local and foreign markets?
3. Will the cost of transport be prohibitive?

Quantity.—It is quite clear that the Corporation has something quite different in view than the collection of the visible nitrates scattered here and there over this large area. The collection of such natural treasure has paid many small men. The product is bought locally by the pound at the price of tea, and from £40 to £60 per ton is given in Johannesburg for it for the making of standard fertilisers. But this proposition is different. It is intended to extract nitrate of potassium from the shales, even when they show no visible nitrates and we may say at once that such an enterprise disposes of the question of magnitude—there are unmeasurable quantities of the nitrate-bearing shales. This is established by irresistible evidence. For we have not only the impartial and patently careful sampling of Mr.

extraction is possible and profitable. That it is possible is no longer in doubt. Nitrate of Potassium of singular purity is actually being produced from the shales on the spot, and we learn that this product will be exhibited at the approaching Agricultural Show. But even this is not enough. We have yet to be assured that after the breaking down of the shale faces and the leaching out of the nitrate content, the process of crystallising can be economically carried out. As far as breaking down the rock face and leaching out the product, these processes can, no doubt, be simply done at a cost less than that of treatment of diamond-bearing yellow ground. The crystallisation, however, demands more consideration. While the satisfactory results reported from Mr. Tutt's experimental plant are



VIEW OF OPENED-UP FACE OF NITRATE-BEARING SHALES ON SPITZKOP.

Ferris, of the Consolidated Gold Fields, whose field-notes exhibit typical occurrences on farm after farm; we have the impartial, but confident, report of Mr. Hallimond, and we have the more or less interested evidence of the Corporation's sponsors and experts. But, in addition to these, we have the critical judgment of Mr. Matsubara, the Japanese savant, who visited the field under the guidance of Messrs. Parry, Leon and Hayhoe, and we have, besides, the evidence of a good many members of the public who have been to look for themselves and have since become interested in the enterprise.

Cost of Extraction.—It is one thing, however, to be satisfied as to the existence of immense quantities of Nitrates; it is quite another thing to be sure that the

good as far as they go, they do not go further than experiment—on the small scale. Students of the problems of crystallisation will not be prepared to expect that the Company's experts will recommend the year-long "natural" methods of the salt-pan. Science must speed up the process and save the cost of flooring required for an output to compete with Chili, as well as of the time required and the loss of water by evaporation. This anticipation is confirmed by the latest reports from the properties, and we learn that the Consulting Engineer proposes to introduce the heat factor under advantageous conditions, and believes that it can be done with little added cost, and great saving both in water, in handling and in time.

Transport Charges.—Critics of the reports by Messrs. Hallimond and Tutt draw attention to the probable cost of cartage to rail from the distant farms to be exploited by the Corporation, and these criticisms were not without weight. But as the Corporation has some of its richest areas within easy distance of the rail, and has concentrated its work upon a remarkable glen, or kloof, adjacent to Prieska town-common, where the shales are in quantity enough to occupy all the attention required for a long time, this question is disposed of.

Remains the water question. The reports say that water is plentiful at shallow depths in the kloofs, and the fact that the farmers have found wells everywhere confirms it. Boring has been begun or is about to begin in the kloof referred to, where the narrowness of the kloof and the serpentine aspect of the faces enable the crystallisation to be concentrated from all sides to the central tanks. Briefly, the economic principle of treatment is that shale is treated on the spot, that is, at the cliff-face and thus transport is reduced to a minimum.

We have presented the general features of this bold enterprise; but the very magnitude of its promise and ambition demands much greater attention than we have given to it. Prima facie, the cost of fuel, the evident purity of the product, the propinquity to rail, the simplicity of the treatment, and the ease of locating points, or lines, of attack are all very greatly on the side of the South African enterprise as compared with the Chili fields, where fuel is dear, distances great, where food and labour have to be transported to desert lands, and extraction is complicated and expensive, and recovery is wasteful. There remains much more to be said and much more will be heard of it, if this ambitious enterprise makes good.

In a suggestive paper read by Mr. Bryant last Tuesday before the South African Association of Analytical Chemists, the origins were discussed. We will say no more on this point now beyond this: The origin of the Chili Nitrates is a subject of great controversy and quite unsettled, though opinion is steadily rejecting the old suggestion of a guano origin. The considerations offered by Mr. Bryant are enough to show that Dr. Marloth's opinion is no better founded and has against it certain considerations which will be posed at another time. Profoundly interesting as the questions of origin are the natural appetite of average mankind—whether for profit or for provender—will care more for the fruitful present event than for the distant cause.

"Wireless Lighthouses" for Flying Pilots.

At present the weather is the great natural enemy of aviation, but before long it will be fully conquered. Two things are needed for victory. One is the multiplication of meteorological stations so that aviators may have foreknowledge of the weather conditions they are likely to meet on long flights. The second is the use of direction-finding wireless apparatus. This apparatus is a British war-product and is at present a secret, but we shall soon learn all about the means by which British inventors were able to provide aircraft with instruments which indicated the distance and direction of wireless stations on land. Aircraft so equipped can fix their position frequently, can report to their base at any moment where they are, what course they are steering, and whether they are in any difficulty. Thus the Imperial "wireless chain" will be an indispensable factor in the organisation of long-distance flying. The direction-finding wireless instruments will, of course, be of great value to shipping in foggy weather or when the clouds prevent the steering of a course by the stars.

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SAMPLES ON VIEW.

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THE WEEK IN THE SHAREMARKET.

General Improvement and Better Tone—Fluctuations in Springs.

AFTER the heavy setback at Thursday's call, Springs came in for considerable support, which brought them up to 52s. 6d. at the close, or a recovery of 2s. 3d. On Friday the market was steadier with a general, if small, advance all along the line. Springs eased off at the call but finished better at the close. Crowns also regained some of their losses. On Saturday morning there was further improvement, notably in New Modders with a gain of 5s. 6d.; Government Areas came in for a good deal of attention, which brought the price to 92s. 6d., or 3s. 6d. above their lowest figure. Modder East also looked up. Crown Diamonds have called a halt for the time being in the vicinity of 24s. At the opening on Monday Crown Diamonds were dealt in at 24s. to 24s. 6d.; odd lots of South-Westerns were wanted at 75s. At the call the advances outnumbered the setbacks, though the latter included Geduld Props and Government Areas. Modder B. and Modder East were in good demand at improved rates; Hume Pipes found a strong purchaser who took everything obtainable from 33s. to 31s. 6d. At noon a slump in Springs took place which brought the price down from 53s. to 50s. 6d. An almost immediate recovery set in, bringing them to 52s. and closing at 51s. 6d. The return for the past month has been disappointing, the reason given being that the new boys have not got into the way of the work. At the opening on Tuesday Springs came in for a further shaking, the first sale being recorded at 50s. 6d. and the last at 50s. At the call they hardened slightly, the price being 50s. 9d., sales and sellers. New Modders were in good demand at an advance of 10s.; Modder East which touched 11s. 9d. the previous day shed off 6d. of their gains. Crown Diamonds are no longer monopolising the market and are returned lower with plenty of sellers. The opening on Wednesday showed considerably more activity and the call was a further improvement. New Modders, after a sale at £26, advanced another 1s. 3d. with no selling price being made. Crown Diamonds hardened and Springs also came slightly better. After the call Crowns fell back to 23s. 9d. On Thursday there was a general improvement with few exceptions, such as African Farms and Leeuwpoot. Springs and Government Areas were the main advances. All the Modder stocks were firm and the whole tone of the market was sounder. The outside dealings for the week were limited. Sales: Makganyenes, 58s. to 61s.; Sakalavas, 8s. 3d.; Monteleos, 12s. 6d.; Koodoos, 24s., after having been 26s. buyers; Options, 24s. to 21s.; Compound diamonds, 3s. 6d. to 3s. 9d.; Henderson's Options, 1s.; New Farms, 1s. 9d. South-Westerns have kept at an average of 75s.

The market, which had closed firm overnight, fell back on Friday morning. The following changes took place: African Farms, 13s.—13s. 9d.; Anglo-Americans, 25s. seller; Brakpans, 62s.—64s.; Main Reefs, 10s. 3d.—10s. 6d.; Crown Diamonds, sales 22s. 6d. to 22s., and closing 22s. 3d. buyers; Consolidated Langlaagtes, 17s. 6d.—19s.; Coronation Collieries, 53s. 9d.; East Rand Minings, 17s.—17s. 6d.; Frank Smith Diamonds, 3s. 10d.—4s.; Glynn's Lydenburgs, 21s. 6d. sale; Government Areas, 92s. sale; Knight Centrals, 7s. 1d. sale; Leeuwpoots, 23s. 3d.—23s. 6d.; Modder B., £7 17s. 6d.—£8; Modder Deep, £7 7s. 6d.—£7 9s.; Modder East, 19s. 1½d.; New Boksburgs, 1s. 3d. buyer; New Elands, 24s.—28s.; New State Areas, 23s. 3d. sales; Randfontein Deep, 4s. 3d.—4s. 6d.; Sub Nigels, 21s. 6d.—22s.; Springs, 51s.—51s. 6d.; Van Ryn Deep, 68s.—68s. 9d.; Van Dyks, 5s. sale; West Springs, 22s. 9d. sale; Wit Deep, 16s. 3d.—16s. 6d.; National Banks, £11 17s. 6d.

	Fri. 4th	Sat. 5th	Mon. 7th	Tues. 8th	Wed. 9th	Thurs. 10th
African Farms . . .	13 3*	13 6*	13 3*	13 6	13 9*	13 6*
Anglo-Amer. Corp. . .	—	—	23 6*	25 0†	26 0†	26 0†
Apex Mines . . .	7 3*	7 0	7 3*	7 3*	7 3*	7 3*
Bantjes Cons. . .	1 10*	2 0	1 11*	2 0*	2 0*	2 0*
Brakpan Mines . . .	62 0*	62 0*	62 0*	62 0*	64 0*	64 0
Breyten Colls. . .	11 0*	11 6*	11 6*	11 6*	11 6*	11 6*
Bushveld Tins . . .	0 10*	0 10*	0 10†	0 10*	0 11	1 0

	Fri. 4th	Sat. 5th	Mon. 7th	Tues. 8th	Wed. 9th	Thurs. 10th
Cassell Coals . . .	—	—	22 6*	22 6*	22 6*	22 6
City and Subs. . .	5 9*	—	6 0*	6 0*	5 6*	6 0†
City Deep . . .	51 3*	51 6*	—	51 6*	51 6*	52 0*
Clydesdale Colls. . .	22 0*	23 0*	23 6*	23 6*	23 6*	23 6*
Con. Investments . .	24 0*	24 0*	—	24 0*	24 0*	25 0*
Con. Langlaagtes . .	16 6*	17 0†	17 0†	—	17 3*	17 0*
Con. Main Reefs . .	10 0	10 6*	10 6*	10 3*	10 0*	10 0*
Con. Mines Selec. . .	25 0†	25 0†	—	23 0*	24 0†	24 0†
Coronation Colls. . .	—	—	—	50 0*	52 6*	52 6*
Coronation Frees. . .	1 3	1 2*	1 1*	1 2*	1 2*	1 5
Crown Dias. . .	23 9	—	24 3	23 7½	24 3*	24 0
Daggafontein Mines .	21 3*	22 0	22 6	22 3*	22 6*	22 6*
Durban Road, Deep .	8 0*	9 0†	—	9 0†	8 0*	—
East Rand Coals . .	2 2*	2 2*	—	2 3*	—	2 3*
East Rand Deep . .	1 0*	0 11*	0 10*	—	0 11*	0 11*
E.R. Minings . . .	16 6*	—	17 6†	17 6†	16 0*	17 3*
East Rand Props. . .	5 3*	5 9*	6 1	—	—	—
Eastern Golds . . .	1 3	1 2*	1 3*	1 3*	1 2*	1 2*
Frank Smith Dias. . .	1 3	4 2	1 1*	4 3	4 2	4 1
Geduld Props. . .	13 6	15 0	44 6*	44 6*	15 6	16 0
Ginsbergs . . .	2 6†	—	—	—	—	3 0†
Glencairns . . .	1 0*	—	1 6†	—	—	1 0
Glencoe Colls. . .	6 0*	—	6 0*	—	6 0*	—
Glynn's Lydenburgs .	—	23 0†	24 0*	—	20 6*	20 9*
Govt. Areas . . .	90 3	92 6	91 6*	91 3*	91 6*	93 3
Jhb. Bd. of Exem. . .	30 0*	30 0*	—	30 0*	30 0*	30 0
Jupiters . . .	—	—	4 9†	—	—	—
Klerksdorp Props. . .	—	—	1 1*	—	—	1 1*
Knight Centrals . .	6 3†	6 10*	6 10	—	7 8	7 8
Knights Deep . . .	—	—	5 0*	—	1 0*	—
Lace Props. . .	20 6	20 6	20 6*	20 3*	20 3*	20 3*
Leeuwpoot Tins . .	23 3*	23 6*	23 6*	23 9*	24 6*	23 6
Luipaardsvlei Est. .	—	—	—	—	—	2 0†
Lydenburg Farms . .	8 3	8 3*	8 4	8 6	8 6*	8 9
Meyer and Charl. . .	81 0*	84 0*	—	—	—	—
Middelvlei Est. . .	1 0*	—	—	—	—	1 0*
Modder B's . . .	152 0	151 6	150 6	151 6*	158 0*	160 0*
Modder Deep . . .	113 6	143 0*	143 0*	141 0*	144 0*	145 0*
Modder East . . .	18 10½	19 3	19 6	19 4½	19 6	19 4*
Do. Options (3yrs.) .	—	3 1*	3 1*	3 3*	3 4*	3 4*
Do. Options (4yrs.) .	4 0*	4 9	4 9*	4 6*	4 6	4 7*
Hume Pipes . . .	31 0*	31 6*	34 6	33 9*	—	34 0†
Natal Naviga. Colls. .	21 0*	—	—	21 6*	21 6*	22 0*
National Banks . . .	£15†	£15†	£15†	£15†	—	£15†
New Boksburgs . . .	1 1*	1 1*	—	1 3*	1 3*	1 6*
New Eland Dias. . .	—	26 6†	—	28 0†	25 0*	25 0*
New Era Cons. . .	9 0*	9 6*	—	10 0*	10 0*	9 9*
New Geduld Deep . .	5 9*	5 11*	5 10*	6 0†	6 0†	5 9*
New Heriots . . .	6 6*	8 0*	9 0*	10 0†	—	10 0†
New Kleinfonteins . .	11 1*	11 3	11 3*	11 4*	11 6*	11 6*
New Modders . . .	£25½*	£25½*	£25½*	£25½*	£26	£26 1 3*
New Unifeds . . .	1 0†	3 6*	—	—	3 6*	—
Nigels . . .	5 6*	5 6*	5 6*	5 6*	5 9*	5 9*
Nourse Mines . . .	11 0†	13 6	13 0*	13 0*	13 0*	13 0*
Pretoria Cements . .	65 0*	65 0*	65 0*	65 0*	65 6*	67 0*
Princess Estates . .	2 6*	2 6*	2 6*	2 7*	2 7*	—
Rand Colls. . .	—	—	—	—	—	3 0
Rand Nucleus . . .	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
Rand Select. Corp. . .	75 0*	75 0*	75 0*	75 0*	76 3*	77 6*
Randfontein Deep . .	—	—	5 0†	4 0*	4 3*	4 0*
Randfontein Est. . .	11 9*	15 0*	15 0*	15 0*	15 0*	15 0*
Roberts Victors . . .	17 6	—	16 0*	—	16 0†	16 0†
Rooibergs . . .	6 1*	6 6†	5 9*	6 0*	6 3*	6 3*
Ryan Nigels . . .	3 3*	3 3*	3 3*	3 3*	3 3*	3 3*
Shebas . . .	1 6*	1 6*	1 6*	1 6*	2 0	—
Simmer Deep . . .	1 6*	—	1 6*	—	—	—
S.A. Breweries . . .	—	—	—	31 0*	—	—
S.A. Lands . . .	6 0*	6 4*	6 6*	6 6*	6 6	6 4*
Springs Mines . . .	52 0	53 0	53 0	50 9	51 6	52 9
Sub Nigels . . .	21 6*	21 9	22 0	21 6*	21 9*	22 0
Swaziland Tins . . .	—	—	15 0*	19 0†	15 9*	15 0*
Transvaal Lands . .	20 0*	21 0*	21 6*	22 0*	22 0*	22 0*
Van Ryn Deep . . .	66 6	67 0	67 0*	67 6*	68 3	68 9
Village Deep . . .	16 0*	16 0*	16 0*	16 0*	16 0*	16 0*
Village Main Reefs .	—	—	10 0†	10 0†	—	—
Welgedachts . . .	21 0†	—	20 0†	—	—	—
Western Rand Est. . .	1 6*	1 6*	1 6*	1 7*	1 9*	1 6
Witwatersrands . .	17 6*	—	—	16 0*	16 3*	19 0†
Wit. Deep . . .	14 3*	11 6*	15 0*	16 0	16 0	16 6*
Wit. Townships . . .	26 0†	—	—	25 0†	—	12 0
Woluthers . . .	2 10†	3 0†	3 0†	3 0†	2 11†	2 9†
Zaaplaats . . .	12 0*	12 0*	12 0*	11 9*	12 0*	—
New State . . .	22 6*	22 3*	23 0*	22 9*	22 6*	23 0
S. Van Ryns . . .	—	8 9*	9 3*	9 0*	9 0*	9 9
S.A. Alkali . . .	31 0†	30 0†	30 0†	30 0†	29 0†	29 0†
West Springs . . .	21 9	22 0*	—	—	22 7½	23 9
Twefonteins . . .	—	22 9*	22 6	22 6	—	—

*Buyers. †Sellers. ‡Odd lots. ¶Ex London.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

State Aid for the Prospector.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I noticed in your last issue that the Minister of Mines, in reply to Mr. Schurink's question, as to whether the Government would do more to encourage prospectors in outside districts with the object of increasing the output of gold, stated that the legislation passed last year provides for certain facilities being granted to prospectors in connection with prospecting operations in addition to those provided for under the Precious and Base Metals Act, 1908, of the Transvaal. He then went on to intimate that provision had been made in the estimates for improvements of communication in remote mining districts. Now, sir, I wish to record the appreciation of all prospectors to Mr. Schurink for endeavouring to do something for the men who are generally the pioneers of the country but who get so little kudos for the hard pick and shovel work they do. Excuse the poetry, but there is a passage from Kipling which I think is singularly appropriate in this respect. It goes as follows:

"Well I know who'll take the credit—
All the clever chaps that followed,
Came a dozen men together,
Never knew my desert fears,
Tracked me by the camps I'd quitted,
Used the waterholes I'd hollowed;
They'll go back and do the talking,
They'll be called the pioneers."

Well, Mr. Editor, we don't mind foregoing the kudos if we can get more material assistance from the Government than we have had in the past. A returned soldier can get liberal grants from the Government if he elects to become a farmer. But what does the State offer the returned-soldier prospector? Nothing. Yet he is as much on the land as the farmer, and the great mineral discoveries of this country are due to the efforts of the prospector. The mining industry finds the bulk of the State's revenue, but whilst the agriculturist can obtain all sorts of grants and loans and facilities the prospector and small mine worker get practically no help whatever. We have Land Banks in this country to foster agriculture, but there is no institution to extend a helping hand to the struggling prospector and small mine worker. Why not a Prospectors' and Small Mine Workers' Bank, Mr. Editor? I think, too, the Government could do something for prospectors and small mine men in the way of establishing portable State batteries such as are in use in Western Australia. In this district (Sabi) there is plenty of scope for light Government-owned mills which would be leased to the prospector or "small man." In conclusion, I should like to say that I hope other members of our Parliament will support Mr. Schurink in his laudable effort to obtain Government support for the prospector and small mine worker in the outlying districts.

—Yours, etc.,

"PIONEER."

Sabi, Transvaal.

Coronation Freehold.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—In view of the rapid development and discovery of valuable reefs all along the Far East Rand and also in the Heidelberg district, as detailed in your very interesting series of articles, could you kindly inform me whether the property held by the Coronation Freehold Estates Town and Mines, Ltd., will be enhanced in value? If it is not giving you too much trouble, I should be obliged if you would publish the holdings of the Coronation Freehold Estates Town and Mines, Ltd., and state if the shares are not worth more than they are quoted on the Johannesburg Stock Exchange.—Yours, etc.,

"INTERESTED."

Balfour,

April 7, 1919.

[The Coronation Freehold Estates Town and Mines, Ltd., has a capital of £500,000 in £1 shares, of which 40,000 shares are held in reserve. The issued capital is thus £460,000. The company possesses 1,095 erven in the township of Balfour, 8,500 acres of land worth from an agricultural point of view probably £35,000, and has cash and other assets worth about £5,000. It also possesses mineral rights over a portion of Brakfontein 85 and an option over mineral rights of Vlakfontein No. 180. The company appears to be economically managed, and the value of the company's holdings would be greatly enhanced in value by satisfactory mining developments in this area. The company's assets appear to have a value considerably in excess of the valuation placed upon the company's holdings by the local market.—Ed., *S.A.M. & E.J.*]

British Telephone Enterprise.

Before the war a very satisfactory telephone exchange system had been established by British engineers in Constantinople. Many of the engineers and others engaged on this enterprise had gained their experience in the development of British telephony, and they met the peculiar conditions in Constantinople with great ingenuity. When war broke out the system was taken over by the Turkish Government and managed by them after a fashion. The latest reports show that the equipment is in good order, although it has not received the attention which it ought to have done. As soon as the Armistice permitted, the Telephone Company sent its engineers to Constantinople to resume their labours. With the reawakening of the East under civilised control we may expect other ancient cities to be likewise the scene of British telephone enterprise. Manufacturers of telephone equipment in Great Britain have greatly enlarged their capacity for output and are equipped to produce everything required for a telephone system.



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ENGINEERING SECTION.

THE KALAHARI LAKE SCHEME.—IV.

[By PROFESSOR E. H. L. SCHWARZ, Rhodes University College, Grahamstown.]

THE SITE OF THE CHOBE WEIR.

In my original proposal, I suggested that the most suitable site for the Chobe weir was at Ngoma, about thirty miles from the Zambesi confluence; the reason for this was, that on the east there are the high, rocky walls bordering the Ngami depression and the flood-plain of the Chobe and Zambesi here rises somewhat. Mr. Ivor Lance, of Senanga, Northern Rhodesia, writes, April, 1918: "At the present moment the spot for the proposed weir at the Chobe mouth is twenty feet under water and the whole of the surrounding country is a vast sheet of water for hundreds of square miles; also the Zambesi including the Barotse Valley is all under water; the flood-water this year is within ten feet of my door and the whole country is like the sea. Now all this flood-water goes down the Zambesi into the sea, but how is it that a certain proportion of it does not find its way into the Okavango and then into Lake Ngami?" The answer is, that the old channels are sanded up and a flood, which only lasts a short time, is not able to clear out channels extending over hundreds of miles. When the weir is in position, the level of the water will be permanently raised and the constant pressure will gradually clear away the sand-banks; in addition, the Okavango, reinforced by the Cunene water, will tend to rush straight down to the lowest point, the Makarikari and not, as at present with its smaller flow, become entangled in the marshes, so that a scouring action will be possible. Mr. Eason, who lived in this district as Magistrate, writes that the only place for a dam is about five miles above the junction with the Zambesi, at the Nduala Rapids, which are formed by the same bar of rock as that which crosses the Zambesi at the Mambova Rapids; both rivers would have to be blocked. I do not, however, propose to build a masonry dam; all that is needful at present is a weir built of piles and filled in with rubble and branches. If this will last only a few years, it will allow the Okavango to scour out its channel, the old courses of the Tamalukan and Botletle will be revived and the Chobe will then tend to flow south instead of north, as at present. When the condition of the rivers has become more or less settled, then we can see what permanent works are necessary to perpetuate the diversion. The enormous floods of 1918 are not likely to be repeated.

Albert Schmidt, in "Eine Talsperre im Kwandotal," proposed a scheme for weiring up the Chobe between the Sebuba Falls and Ngoma, placing a regulating weir near Linyanti, further up; such a plan is certainly advantageous, as it relieves the lower weir of much of the pressure. Schmidt's scheme was intended to provide a sufficient fall at the lower weir to drive turbines to supply electricity to the railway which was proposed, joining the South-West Protectorate with Rhodesia, but his levels were altogether exaggerated.

THE MAKARIKARI.

The Makarikari is a vast depression, covering an area of some 15,000 square miles; it used to be flooded by the Botletle and existed as a lake up to about 1820. Then, for some reason, the river ceased to flow and the waters dried up, leaving the floor covered with the dead bodies of hippopotami, crocodiles and fish on which vultures from all over Africa feasted. For some years a lake or marsh existed in the south-west corner, the Cumado Lake, but all traces of this has now disappeared. The Soa and Ntwetwe Pans are depressions sunk a few feet below the main floor, just

as the Etosha Pan is sunk in the grass flats. These still fill from the Botletle, or from the rivers, like the Nata, which flow into them from the north or east; Mr. Lance writes that he once walked out in the water a distance of half a mile to get a flamingo he had shot and found the water only waist high at that distance. The natural outlet of the Makarikari is on the south. There is here a level river-bed called the Letyaho, down which the water would flow were the Makarikari to be filled. From here there is sandy country in which all traces of the former river bed have been lost; the water found its way to Lehututu somehow, but only a succession of vleys mark its probable course. Lieut. A. W. Hodson describes the country between Lehututu and Ngami, in his book "Trekkings the Great Thirst," and Mr. Eason was Magistrate at Lehututu for some time. This is the country that will be most benefited by the scheme; it is quite flat and the water must find a central channel, or it could be forced to take a defined course. From this, irrigation canals could be taken out and a large part of 50,000 square miles could be opened up to closer settlement. The ground is exceedingly rich and the plain opens out on the south on to the lower central Kalahari which extends to the Orange River, so that there would be enough drainage to overcome a tendency which all irri-



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gated land has to become brak. At present, the country is sparsely inhabited by Bakalahari and Masarwa, whose plight is not an enviable one in the "Great Thirst." There is a possibility that another branch of the overflow from the Makarikari may pass down to the mythical Andersson's Vley and so, through Karkai and Khokong, to the Molopo; in this way a considerable eastern tract would be added to the area suitable for development. From Lehututu, the overflow would find its way to either Mokopon, on the Molopo, or to Mier, on the Nosob. On either of these rivers there are alluvial grounds suitable for irrigation, extending for 250 to 300 miles, practically useless at present. Owing to extraordinary floods in 1915 and 1918, the Molopo came down in flood, but was unable to reach the Orange River; it found the lower channel blocked up so that the water spread out and made a great lake at Abiquas Puts. Where the railway crosses the lower Molopo, it has been thought necessary to place only an insignificant culvert, but when the Kalahari scheme is in working order, the Molopo will be a mighty river. Signs of its past greatness are everywhere evident in this lower portion, the high ground giving way to the river valley in a series of row of great bluffs. It will take some years to make the Molopo a perennial river, for there are enormous stretches of desert to supply, before the water can reach the Orange River, but there is nothing to prevent this happening. Each section of the scheme, as it comes into action, will enable the next section to fall into line and the rains of each season will spread over a wider area. Instead of the effects of the droughts being cumulative, as at present, and the aridity of the country increasing, the effect of the successive flooding will be cumulative, and the area over which there is sufficient moisture will increase. When the river from the Makarikari to the Orange River is restored, for the first time for hundreds of years will there be in South Africa a natural river, unencumbered with rapids; the river which will flow through the Kalahari will flow down an evenly graded plain right to the mouth of the Orange River. Waterways will be created from the Orange River mouth to Ngami, 1,000 miles; Ngami to Erickson's Drift on the Cunene, 600 miles; and Ngami to the Victoria Falls, 300 miles; the greater portion of these will be navigable. Instead of swamps, clear water will exist along which settlement will be possible and fever will be controlled as it has been along the Panama Canal.

Automatic Telephone Exchanges.

In the Assembly last week, Sir Meiring Beck, in reply to Mr. Madeley, stated that he proposed installing automatic telephone exchanges at Capetown, Johannesburg and Maritzburg probably in from three to five years' time. To a very considerable extent the lady operators would be displaced, but exact or even approximate numbers could not be stated, as they would depend on the growth of the telephone service in the meantime. Continuing, the Minister of Posts and Telegraphs stated: The expenditure in respect of posts, telegraphs and telephones is not separately recorded, the duties of very many officers unavoidably and necessarily covering all branches of business, but it is estimated that the working expenditure on telegraphs and telephones combined, as distinct from postal services, was: 1911, £528,981; 1912, £562,167; 1913, £599,762; 1914, £622,676; 1915, £657,220; 1916, £673,355; 1917, £711,641; 1918, £788,294. These figures do not include interest charges, which on the latest information available, amount to approximately £132,000 per annum. There is no machinery for setting up arbitration or conciliation boards. I cannot consider this matter until the report of the Public Service Inquiry Commission has been received, in which, no doubt, the question will be dealt with along with others affecting the position of public servants generally. There is no outside engineering employment identical with that of the telegraph and telephone workmen in the post office, and a comparison of the rates of pay is therefore not practicable. There is no standard journeyman's rate for telegraph and telephone linemen. The men in all cases progress on authorised scales of pay, and have in addition various privileges, such as leave of absence and pension prospects, attach-

ing to employment in the public service. Present conditions are now being reviewed. On completion of their period of apprenticeship, apprentices will receive appointments at such rates as may be fixed under a revised classification scheme.

New Railway Rolling Stock.

At the annual meeting of the Bloemfontein Chamber of Commerce last week, the President surveyed the general railway position, dealing with fares and the shortage of rolling stock, in the course of which he gave some interesting figures which have not hitherto been published. At the present time, he said, 56 first-class saloons were being built, 25 in South Africa and the balance overseas; 56 second-class saloons are being constructed overseas, and 74 in South Africa; 50 combination first and second-class saloons are also being built in this country; 400 steel bogie trucks of 50-ton capacity, 300 of 40-ton, and 200 bogie cattle trucks. There are also being built for South Africa 1,000 short cattle trucks, 750 sheep trucks and 500 new type universal cattle trucks. These have a division in the centre so that sheep and cattle, or horses and cattle, may be carried in the same truck. One hundred refrigerator cars are being constructed in South Africa, of which 35 are partly completed, and the balance are well in hand. One hundred insulated trucks for dairy produce are also under construction in South Africa, and the body work is well in hand; while 200 engines of a powerful type are on order, and a portion is expected to be delivered about July. Plans for new goods sheds at Bloemfontein are being prepared. Material progress had been made with the great irrigation schemes on the Modder River, which will cost £415,000, and will provide 140 miles of canals in an irrigable area of 8,000 morgen.

The Latest "Limelight."

become a metaphor instead of a statement of fact. There is very little actual limelight in theatres or anywhere else to-day. The electric arc lamp superseded it many years ago and became standard practice for cinematograph work. Now the arc lamp itself is threatened with extinction by the incandescent electric lamp of the "gas-filled" type. In this lamp a filament of tungsten wire is used in a bulb filled with argon, the inert gas whose presence in an atmosphere was discovered by the late Sir William Ramsay. The filament is wound in a close spiral and gives a small but intensely brilliant source of light which, by means of suitable reflectors, can be used to great advantage in projection work. The latest advance in this direction comes from a British firm which has produced a lamp in which the filament is wound in conical form. This gives practically a solid disc of light which can be very easily and accurately focussed so as to throw no shadows on a cinematograph screen. As the wire is held in shape by its own stiffness it has to be made thicker than usual and is therefore unsuitable for voltages above 20. Where alternating current is available, a small transformer can be put in to give this low pressure. In laboratories, where low pressure circuits from secondary batteries and other sources are at hand, this lamp is ideal for microscopic and other projection work. It gives an absolutely steady light and involves no trouble in the way of changing carbons, as has to be done with the arc lamp. Great interest has been aroused by this improvement among scientific circles in Great Britain.

British Motor Car Revival.

The established position of British motor car manufacturers in overseas markets has necessarily suffered during the war through the prohibition of exports of motor vehicles. Their agents abroad were compelled to do business with foreign makers and to introduce foreign cars to their clients, thus utilising the goodwill built up with British support for the purpose of obtaining a footing. All this was one of the unavoidable ill-effects of the war. But British motor manufacturers are determined to regain their footing and to supply as heretofore the most dependable and the most durable cars for use in countries overseas. At the outbreak of the war large numbers of British-built motor vehicles were commandeered from civilian users, and from that time onwards the whole output of the manufacturers was taken up by the Government. Large numbers of Government vehicles no longer required for military service will now be thrown on the market, and care will be needed in disposing of these vehicles, so that the least possible detriment to the industry responsible for their production in times of national emergency may ensue. It is strongly urged that all surplus vehicles shall first be offered to their original makers for repair and overhaul. The condition of vehicles so overhauled would be guaranteed by the manufacturers, and this guarantee would materially increase their market value. Such an arrangement should prove advantageous to colonial buyers, for a large number of valuable cars in good condition should become available for shipment to colonial markets at low prices. The experience gained by British makers of cars for war service has enabled them to construct vehicles capable of withstanding the roughest use, and eminently suited for hard wear in countries where roads are primitive.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Steel, Iron and Machinery—Explosives—Timber and Roofing Iron—Electrical Goods, Oils and Colours—British and American Shipping.

WHAT with the Power Station strike and the seemingly favourable negotiations with the building strikers, business hung very much in the balance, and on Thursday a better tone prevailed because we were all hopeful when it was understood that it was a question of 3s. 4d. per hour. Before this several cheap lines were put through on account of financial exigencies. On the Exchange, for example, galvanised roofing iron was quoted at 1s. 4½d. per foot, but several lines pressing for spot cash went at about 1s. 3d. merchant to merchant, and flat galvanised at 50s. to 52s. 6d. per 100 lbs. All these things and mining material generally are dribbling through from America and Britain to swell the already overloaded market. The congestion is anything but over as the mines are using from their reserve stocks with occasional requisitions for oddments and spares used up. This is not surprising, as the general ballot talked about includes the mining people and now there is the judgment that the mines have to pay the Provincial Council's profit tax. Another reason for business being upset is the delay in the oversea cable service, as it takes about a fortnight to obtain a reply from Britain or America. In one quarter it was said that when the builders resume work a large number of tenders for new erections will be held back on account of the position of the Johannesburg Town Council owing to the resignations of so many members, and also financial people interested in Johannesburg at a distance are much perturbed over the tendency towards Bolshevism. The latter question may soon settle itself now that the Russians concerned in lecturing have left the Rand, but evidently not for Australia where the Bolsheviks had an extremely bad reception at Brisbane recently. A little time may assist the Johannesburg Municipality to rehabilitate itself—but one does not exactly know how. But one does know that all these elements put the trade clock back considerably.

STEEL, IRON AND MACHINERY.

The price of Dunsward iron is 35s., and Vereeniging mild steel 37s. 6d. per 100 lbs., presumably to meet the lower values at which the oversea iron and steel are sold, not because it is cheaper but owing to so much coming forward by every ship from Britain and America, and holders are selling to make room for other shipments to arrive. There is a lot of business doing with the country which has been extending for the Dunsward and Vereeniging products, particularly during the war period. Wire nails are 2 in. to 2½ in., 60s.; 3 in., 57s. 6d.; 4 in., 55s.; 5 in., 50s.; and 6 in., 47s. 6d. per 100 lbs. There is a run on barbed wire at 37s. 6d. to 45s. for fencing purposes. Imported iron is coming in by every mail from Britain, therefore an easier tendency prevails, especially in the smaller sizes for round, flats and so forth. The machinery business is under a cloud, as a dealer went out to a mine belonging to a group on Wednesday with the full purpose of closing for several engines and boilers offered to him about six weeks ago, when he was told that the consulting engineer had given instructions not to sell anything, therefore the would-be purchaser could not obtain a hearing at all. However, he came away with the impression that the actual signing of peace might make all the difference. There is a demand for second-hand tram rails for the Transvaal and Natal coalfields. In one case a heavier rail was taken as a substitute, thus indicating that the ordinary tram rails are scarce and the demand good as itinerant buyers go through all the yards. As regards the strikes a steam tractor engine and two high pressure boilers were mentioned as being held over until things were going smoothly again.

EXPLOSIVES.

There is no indication of any alteration in price of raw materials at present. The shipping facilities are, however, sufficient to keep the South African factories supplied with all their requirements. There are large stocks of explosives on hand here, but when these are lowered there should be no difficulty in getting into a cheaper zone. This is the factory view, but the mine buyers are expecting cheaper explosives from the British Government stores of war materials, as intimated some time ago. Much in this respect may not come about until peace is signed, which is looking very problematical with the turmoil in Berlin.

TIMBER AND ROOFING IRON

The price of deals has decreased to 1s. 6d. and 1s. 7d. per foot according to length. This is practically a penny per foot, which is difficult to explain, although several reasons are assigned. First is the builders' and sawyers' strike, the latter interfering with the country trade. The next is there are quantities available at the coast through speculative consignments bought before the armistice, and it is said shippers in addition to supplying actual orders took advantage to speculate on their own account, hence the present congestion, because the prices in question are lower than cost of landing. However, as the reduction in freight has already been felt and another reduction expected in May, holders, both merchants and speculators, think it advisable to unload before a fall in values in Sweden takes place. Further, the London and Swedish exchange is now almost at par for the English sovereign, whereas at one time it was at about 5s. discount. Hopes are entertained that 1s. 6d. is the bedrock price for a time, especially if the builders' strike should be settled within a short time. The fall in timber is bad enough for holders, but the galvanised roofing iron is worse, as the merchant to merchant price is only 1s. 4½d. per foot for the best 24 gauge. It is said that this is below the Durban quotation of 1s. 6d., and in support of this statement a vessel was ordered to deliver some very big consignments at Durban instead of East London. Second-hand iron is about 1s. per foot 21 gauge, and a line of 22 gauge went at 1s. 2d. Good deals are also 1s. 2d., but business is stagnant as cutting cannot be done, therefore plenty of business is expected from conditional orders as soon as the sawyers commence work. Stocks of the best house timbers and roofing iron are anything but plentiful, through the gradual absorption and very little replenishment.

ELECTRICAL GOODS.

The market is if anything worse than last week, but hopes are entertained that when the builders' strike is settled quite a jump will take place in business and the prices firm up. During the week there have been enquiries for lamps and many forward orders booked, always subject to normal conditions. A leading distributing house used to dispose of fifteen or sixteen hundred pounds' worth of lamps per month, but now the demand as compared with that turnover is small, therefore stocks have accumulated very considerably. A firm received a lot of material during this week, representing some £3,000, and quantities, it is understood, are on the water, which may mean a lowering of prices in the near future. Country business continuing pretty fair.

OILS AND COLOURS.

Business is exceedingly quiet on account of the strike conditions. The "Cape" painters are said to be doing more work in the eastern and southern suburbs, naturally at about half the cost of a trade union artisan. White lead has been sold as low as 75s. per 100 lbs. and 11d. retail or in small lots. Turps are 72s. 6d. 2-4's and 77s. 6d. 10-1's. Linseed oil is cheaper for speculative lots, but 12s. 6d. per imperial gallon is the ordinary quotation. It is difficult to obtain really correct quotations within a small fraction for oils, white lead, turps and such like. The plate and sheet glass position is quite good so far as supplies are concerned. Canadian putty is offered at 5½d. l.o.r. Durban, which compares favourably with about 9d. and 10d. per lb. here.

BRITISH AND AMERICAN SHIPPING.

An importing American house says that merchants are beginning to make enquiries for mining material again, which is welcomed after the lapse of business since the armistice. A remark was made that American manufacturers were having a slack time after the pressure experienced during the war. There are plenty of steamers offering from New York to South Africa. Boats are coming more frequently from England, as five of the Union Castle line are on the water now. These are all cargo boats, but they carry troops or passengers, therefore by next month both mail and cargo boats should conduce to the making of regular sailings. Since the Armistice the freight rate has been reduced for 120s. to 80s. per ton. However, the extra cost for passengers has not been altered.

PERSONAL.

Mr. D. C. Greig has been re-elected President of the Johannesburg Stock Exchange, and Mr. D. C. Matheson Vice-Chairman.

* * * *

Mr. Littlejohn Philip, O.B.E., of England, the Consulting Engineer appointed by the Union Government to investigate and report upon the location and design of inland and port grain elevators, having completed his inquiries at Cape Town and in the Western Province, excepting in the Porterville district, will visit Porterville and the surrounding districts on Wednesday, April 9, on which date he will meet farmers and others interested in the grain elevator question at the Court House, Porterville, at 10 a.m. He will arrive at Johannesburg on Friday evening, April 11, and will remain at that place until Tuesday night, April 22, when an opportunity will be given to the interests concerned at Johannesburg to represent their views to the Consulting Engineer.

Companies To Be Struck Off.

In accordance with section *one hundred and ninety-six* of the Companies Act, 1909, at the expiration of three months from the date hereof the names of the undermentioned companies will, unless cause is shown to the contrary, be struck off the register, and the companies will be dissolved, in terms of sub-section (5) of the above-mentioned section:—Excelsior Buildings Company, Limited; The United Baking Company, Limited; The Keeling Agency, Limited; International Patents Exploitation, Limited; The Malgo Developing Syndicate, Limited; The London and Rhodesia Investment Company, Limited; Trimble Detective Agency, Limited; The Universal Stores, Limited; African Illustrated Newspaper Company, Limited; The Premier Timber Company, Limited; Agricola, Limited; The Johannesburg Psychical Research Society; New North Clewer, Limited; The Modern Dairy, Limited; Albert Phillips and Company, Limited; Star of Rhodesia, Limited; Koehler Motor Wagon Agency, Limited; Macklin, Limited; The Apollo Theatre, Limited; Hughes Meat Market, Limited; The Kangaroo Tobacco Company, Limited; The Diamond Cycle and Motor Works, Limited; Artistes Hotels, Limited; The Tipperary Tea Rooms, Limited; T. and F. Company, Limited; G. W. Shilling and Company, Limited; The Guildhall Company, Limited; Douglas Tin Recovery Company, Limited; Paruk and Company, Limited; The Industrial and Mercantile Trust, Limited; The Rand Commercial Agency, Limited; Sunshine Settlements, Limited; H. R. Smolian and Company, Limited; Saved, Limited; Edwards and Lys (Timber), Limited; The Fairview Steam Bakery Company, Limited; Mhlali Oxides, Limited; The E. B. D. Madagascar Syndicate, Limited; Legates Monthly, Limited; Harvest or Diamond Mining Company, Limited; The Rand Jewellers, Limited; Bean Monde, Limited; Abrama, Limited; The Standard Firewood and Supply Company, Limited; Ward, Limited; The Magnet Chemical Works, Limited; The Invalid Chair and Cabinet Works, Limited; The East Rand Club, Limited.

INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- April 17.—Apex Mines, Ltd.—Twenty-second Ordinary General, Board Room, Fourth Floor, National Bank Buildings, at 11 a.m.
 April 22.—Princess Estates, at 3 p.m.
 April 23.—Modder Deep Levels, at 10 a.m.
 April 23.—Geduld, at 3 p.m.
 May 23.—West Springs, Ltd.—Second Ordinary General Meeting, at 10.30 a.m.
 May 23.—Daggafontein Mines, Ltd.—Fourth Ordinary General Meeting, at 11 a.m.
 May 23.—Springs Mines, Ltd.—Tenth Ordinary General Meeting, at 12 o'clock.
 May 23.—Brakpan Mines, Ltd.—Sixteenth Ordinary General Meeting, at 2.30 p.m.
 May 23.—Rand Selection Corporation, Ltd.—Twenty-seventh Ordinary General Meeting, at 3.30 p.m.
 May 23.—New Era Consolidated, Ltd.—Seventh Ordinary General Meeting, at 4.30 p.m.
 May 27.—New Primrose G.M. Co., Ltd.—Annual Ordinary General Meeting, at 12 o'clock.
 May 27.—New State Areas, Ltd.—Second Ordinary General Meeting, at 12.30 p.m.
 May 27.—New Unified Main Reef G.M. Co., Ltd.—Twenty-first Ordinary General Meeting, at 12.15 p.m.
 May 27.—Ginsberg G.M. Co., Ltd.—Twenty-fourth Ordinary General Meeting, at 11.30 a.m.
 May 27.—Glencairn Main Reef G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 11.45 a.m.
 May 28.—Consolidated Langlaagte Mines, Ltd.—Sixteenth Ordinary General Meeting, at 10.40 a.m.
 May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.—Ninth Ordinary General Meeting, at 3.30 p.m.
 May 28.—Langlaagte Estate and G.M. Co., Ltd.—Twenty-eighth Ordinary General Meeting, at 12 o'clock.
 May 28.—Randfontein Estates G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 2.45 p.m.
 May 28.—Van Ryn Deep, Ltd.—Fourteenth Ordinary General Meeting, at 3.10 p.m.
 May 28.—Witwatersrand G.M. Co., Ltd.—Annual Ordinary General Meeting, at 11.30 a.m.
 May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.
 June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
 June 19.—Durban Roodepoort Deep, Ltd., at 12 noon.
 June 20.—City Deep, Ltd., at 12 noon.
 June 24.—Village Deep, Ltd., at 2.30 p.m.
 June 24.—Geldenhuis Deep.—Twenty-fourth Ordinary General Meeting, at 11 a.m.

South African Gold Trust.

The directors of the South African Gold Trust announce that the realised profit on the year's operations, mainly derived from dividends on investments and interest on loans, amounts to £95,740, from which the dividend on the Preference shares and French Government tax have been deducted, leaving £64,715, which with £68,012 brought forward gives a total of £132,727. The directors recommend a dividend of 10 per cent., free of tax, which will absorb £50,600, and the transfer of £20,000 to reserve, leaving £62,727 to be carried forward.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of March: Central Mines: Tons crushed, 12,800, yielding 4,581 fine ozs. Elandsdriif Mine: Tons crushed, 1,500, yielding 868 fine ozs. Vaalhoek Mine: Tons crushed, 1,610, yielding 573 fine ozs. Estimated value of month's output, £25,012; estimated profit for the month, £3,110.

The Week's Meetings.

JUPITER G.M. CO.

MARKED REDUCTION OF PROFITS.

Need for Native Labour.

Mr. D. Christopherson presided at the annual meeting of the Jupiter G.M. Co., Ltd., on March 9th, and in moving the adoption of the report of the directors and accounts said: It would be seen that the profit carried down from working account was £3,221. To that sundry revenue, interest, sale of water, etc., amounting to £7,453 was added, making a total of £10,674. From that there were deducted sundry accounts written off, special expenditure due to the war, and payments to Miners' Phthisis Compensation Fund, totalling £3,063. The nett amount therefore carried to the appropriation account was £7,611, making the total amount to the credit of that account £89,638. Out of that sum No. 3 Dividend of 1½ per cent. absorbed £12,677, while a nett amount of £1,036 (that was after allowing for £1,812 received in respect of sales of plant), was appropriated for capital expenditure, thus leaving a balance of £75,925 carried to the balance sheet. That amount was represented as to £32,689 by investments, stores, and other assets in connection with the Company's business, and as to £43,236 by the excess of cash (including sundry debtors) over sundry creditors and dividend provisions. The latter figure compared with £52,075 at the end of the previous year but as he had already pointed out, the amount carried to the appropriation account at 31st December last was only £7,611 as against £44,483 at 31st December, 1918, so they would see that once more they had to draw to a considerable extent on past profits in order to pay the 1½ per cent. dividend last year. Under the adverse circumstances which obtained throughout the whole of last year, they did not feel justified in paying a larger dividend, more particularly as they had been desirous, as he pointed out last year, of maintaining the cash position as far as possible so as to have funds available either for shaft-sinking or for increasing the rate of development or for any other purpose as might be deemed desirable. Turning to the balance sheet they would note on the credit side that the amount locked up in "stores and materials on hand" had increased to £25,428 as against £17,250 a year ago. Now that the war was over they hoped that gradually they might be able to reduce that figure, and thus improve their cash position. "Investments" on the other hand showed a decrease, viz: £4,169 compared with £8,583 previously—that was due to the sale of £4,286 Union Government 5 per cent. stock, and to certain necessary adjustments in respect of the company's interest in the Witwatersrand Native Labour Association and Native Recruiting Corporation. Taking the declared results of operations for last year as compared with the previous year the tonnage milled shows a decrease of 20,400 tons, and although the total yield improved by 2,259 ozs., and the yield per ton improved by 2s. 4d., unfortunately the working

costs were 4s. per ton higher, with the net result that a decrease in the working profit was shown of £25,121.

Rise in Working Costs.

As would be seen from Mr. Leslie's report, despite the slight increase in the native labour force, the shorter hours of work underground (as the outcome of agreement between the Chamber of Mines and the Federation of Trades) which took effect from 1st January, 1918, as well as a reduction of 5.75 inches in the average stoping width as a result of careful mining, were factors mainly responsible for the reduced tonnage output. The rise in working costs of 4s. per ton milled was due principally to those conditions, and to increased cost of mine supplies—and although there was the encouraging improvement in yield of 2s. 4d. per ton (some 4d. odd of which was accounted for by the inclusion of 1,100 fine ozs. from the gold reserve) the higher relative increase in working costs more than offset that by nearly 1s. 9d. per ton, which increase, as they would see, Mr. Leslie stated was not due to want of effort on the management's part to work the mine economically and to the best advantage. The working profit for last year was only 2.9d. per ton milled. Since then the working results have been as under:

January—Loss, £331, equal to 3.006d. per ton.

February—Loss £1,702, equal to 1s. 6.482d. per ton.

March—Loss £1,774, equal to 1s. 5.446d. per ton.

There could be no doubt but that these unsatisfactory results are to a very large degree due to shortage of native labour. He did not think the percentage of complement had ever been so reduced in the history of this mine. In January the percentage was 55, whilst in February and March some slight improvement was shown in that it rose to 56 and 58 respectively.

First Essential for Profit.

It was impossible to expect such a mine as that to work profitably with little more than half its native labour requirements. The engineers and management had made every endeavour to meet this deficiency by the introduction of jackhammers where possible, but owing to the nature of the ground in the mine the profitable use of this class of drill was limited. The first essential for the mine to work at a profit was an improved native labour position as, given a sufficiency in that direction, and even allowing for no reduction in cost of stores for the time being, the results would at once show improvement. Sir Evelyn Wallers in his speech at the last annual meeting of the Chamber of Mines referred to the Government having been approached as to the reintroduction of tropical natives, and he gave reasons as to why such a request was justified. He (Mr. Christopherson) earnestly hoped that Sir Evelyn, the Chamber, and others interested in the industry, would again take up the question with the Government and urge the extreme necessity of securing a larger and permanent increase in this class of labour on these fields and from a new source. With the ever-increasing demands, in other directions within the Union and the adjoining territories, on the present sources

from which labour was recruited, the industry could rely on a sufficient and permanent supply from British South Africa and Portuguese Territory, but some new source of supply must be found. Quite apart from the very existence of many mines being dependent on a sufficiency of native labour (and what that meant to shareholders and to trade generally) there was the wider and, to his mind perhaps, the more important aspect, and that was employment for the thousands of soldiers who were now returning from active service. If permission was granted to recruit a small number of these tropical boys, and it was proved that through the efforts of Dr. Lister a remedy or a preventive had been found against pneumonia, the Government might then allow up to 5,000 boys to be recruited, and if again satisfactory results were obtained, a total limit of 10,000 boys could be allowed and no more, he was convinced that if this were done it would not only relieve the situation to such an extent as to ensure the continued existence of certain mines for a number of years, but would largely tend to do away with this spasmodic shortage of labour which we now experience, and which in turn causes periods of unemployment to a large number of Europeans.

When addressing them at the last Annual meeting he referred to the trouble and inconvenience which resulted at the top of the Howard Vertical Shaft in consequence of the saturated condition of the ground owing to the exceptionally wet season. The ground at the collar of this shaft caved in, displacing the steel headgear front leg foundations, also the grizzlies and part of the fines bin. The reconditioning involved alterations to the structural work at this shaft in order to relieve pressure in close proximity thereto. The total cost of all this work has been over £5,000.

No shaft-sinking was done during the year under review. The Howard Incline shaft at the end of the previous year had reached a depth of 151 feet below the horizon of the 12th Level, but, as the Consulting Engineer pointed out, the heavy character of the rock encountered in that shaft was such that it was considered unsafe to continue the further sinking thereof, and consequently a cross-cut was now being advanced in a south-easterly direction from the 11th Level to a point beyond the "Treasury dyke," where it was proposed to sink a sub-vertical shaft to command the deeper ground.

Ore Reserve.

The ore reserve at the Howard shaft section is estimated at 31st December, 1918, at 674,000 mine tons fully developed of an average value of 5.98 dwts. per mine ton. This compares with 787,000 mine tons of an average value of 5.27 dwts. at 31st December, 1917. There are also 76,000 mine tons of partially developed ore of an indicated value of 5.7 dwts. per mine ton. This compares with 122,000 tons of 1.8 dwts. previously. Owing to the further increase last year in the working costs, some 154,000 mine tons of ore have been eliminated as unprofitable under the present conditions of working, and this has influenced favourably the average value of the reserve ore as recorded.

As regards the immediate prospects of the mine, as Mr. Leslie states, this must be dependent on a more plentiful supply of native labour and more favourable economic conditions to increase the output and lower working costs.

Engine Driver's Bravery.

I would like to refer to a winding accident which occurred to the man hoist in the Howard Incline Shaft on 27th January last, when the driver, Mr. William Wilson, showed extreme courage and wonderful presence of mind, whereby the lives of 20 natives were saved. Details of this accident have already appeared in the press, so need not again be repeated here, but I am sure shareholders will fully approve of the action taken by the Board in this matter and will heartily

join in the admiration and appreciation of so gallant an act. At the present time there were still twelve of the Company's employees who had not yet returned from Active Service. It was with the deepest regret that he had to report that Mr. N. Wilson, one of their employees, and whom he mentioned at the last annual meeting as having been wounded, was later on reported as missing. Intimation had since been received to the effect that death was now accepted. They expressed their sincere sympathy with his relatives. In conclusion he wished to express to Mr. Macgregor (the supervising manager), to Mr. Ferguson (the mine manager), and to the mine staff generally their appreciation of their excellent work during the year. It had been another difficult and trying year, and great credit was

due to them, as well as to the consulting technical staff, for every endeavour which had been made to work the mine economically and to best advantage.

Mr. Max Honnet seconded the motion for the adoption of the report and accounts, which was carried unanimously. The retiring directors were re-elected, and the auditors re-appointed.

There were present at the meeting Messrs. D. Christopherson, C.B.E. (chairman), Lieut.-Col. F. Leslie Brown, D.S.O., D. W. Rossiter, A. Sprinz, W. S. Smits, C. Meintjes, R. O. Stone, M. Honnet, J. E. Kent, S. M. Nelson, A. E. C. Hocking, F. H. Down (secretary). There were represented personally and by proxy 498,644 shares, out of an issued capital of 1,014,200 shares.

A New Fertiliser Industry.

The industrial community generally will be interested to know that a new fertiliser made on the Rand will very shortly be ready. This fertiliser, which is being made from the phosphatic rock at Saldanha Bay, contains a very large percentage of phosphoric oxide. The process by which the rock is treated is entirely new, and is the outcome of very careful research by a specialist who always had in view the treatment of the Saldanha Bay rock. The phosphoric oxide content conforms to the Government regulations. The treated rock phosphate contains from 14 per cent. to 16 per cent. phosphoric oxide, which is soluble in 2 per cent. citric acid. It is put up in 200 lb. bags, each bag being securely sealed so as to prevent any tampering with the contents. The price is considered to be exceedingly low for a fertiliser containing up to 16 per cent. phosphoric oxide. Owing to there being no acid in the fertiliser it may be kept and stored for long periods without any bad effect on the bags. This is a most important point. The fertiliser is

most carefully manufactured, and conforms to the Government requirements in every way. In making up this fertiliser the greatest care has been taken so that no ingredient used in the manufacture is in any way detrimental to the soil; in fact the fertiliser contains nothing except such productions as are of distinct advantage to the soil, especially to the sour soil which is often met with in the southern wheat-growing districts. It is expected that at the end of March the Salphos Fertiliser Factory in Johannesburg will be turning out some 2,000 to 3,000 tons of treated fertiliser per month. A site of five acres has been taken at the old Ferreira Mine, and on this site is rapidly springing up a huge factory. Two large tube mills, many large steel tanks, in addition to stores and warehouses are all rapidly approaching completion. The production of such a valuable fertiliser will be a great boon to the farmers of the Union. Agents for the various Provinces have already been appointed, and in due course detailed advertisements will appear in these columns.

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Tin Mining: Movement to Secure State Assistance.

A deputation of the Joint Industrial Council of the Tin Mining Industry of the United Kingdom, headed by Mr. C. A. Moreing (the Chairman), was received by Mr. W. Clive Bridgeman, Parliamentary Secretary to the Board of Trade, at Whitehall Gardens recently. The deputation asked for such financial assistance as would enable mines to continue working, and so bridge over the reconstruction period, and that meanwhile State inquiry should be held as recommended by the Committee on Production.

The reasons for these requests were stated to be as follows:—(1) The necessities of the State in the matter of labour for the Army, and in the control of the prices of tin, have helped to bring the industry to its present parlous condition. (2) The high prices of coal and materials, the former mainly due to the increase of wages of coal miners authorised by the Government Coal Controller, have had a serious effect on the industry and have prevented the tin miners from being paid a wage adequate to meet the increased cost of living. (3) The price of tin for approximately the first two and a half years of the war was less than its pre-war selling price, and the subsequent rise was checked by Government control and reduced to such a figure that tin cannot be produced in Cornwall under existing conditions other than at a heavy loss, except in the isolated cases of abnormally rich lodes and with the assistance afforded by the sale of the by-products, wolfram and arsenic. (4) That in each recent case of an inquiry by the Government Committee into the condition of the industry, and the cause of the existing state of affairs, evidence has been adduced sufficiently strong to show the necessity for practical support and confirming the statement now made. (5) That the Government man is now being provided with out-of-work donations which could be spent to better advantage in another way. (6) Unless the mines now working can be maintained the labour now employed must in due course be thrown out of work, and no work will be ready for the miners now being demobilised. In that event it is clear that very large sums of money will have to be found by the State by way of unemployment wages. The deputation pointed out that in time of war or other emergency the supply of tin, and in some cases the production of wolfram and arsenic, were absolutely essential. A regular and increasing quantity could be obtained from Cornwall, without danger of delay or loss,

which supplies from abroad were subject to through the submarine warfare. The deputation further submitted that in normal times approximately 8,000 people were engaged in the industry. In 1917 this number was reduced by enlistment to approximately 5,000. It was from the ranks of the tin mining workers that a large proportion of the tunnelling corps were recruited for the Army itself during the war for tunnelling purposes in France, and those men who had done such splendid work for the country would on demobilisation be without work unless the industry was maintained at its pre-war level.

Mining and State Aid.

Like the low-grade mines on the Rand, the British tin mines are calling for State aid. A deputation of the Joint Industrial Council of the United Kingdom, headed by Mr. C. A. Moreing (the chairman), was received by Mr. W. C. Bridgeman, Parliamentary Secretary to the Board of Trade, on January 30th. The deputation asked for such financial assistance as would enable mines to continue working, and so bridge over the reconstruction period, and that meanwhile a State inquiry should be held as recommended by the Committee on Production. The deputation asked for this because the necessities of the State in the matters of labour for the Army and control of prices of tin had helped to bring the industry to its present parlous condition. High prices for coal and material had also helped. Tin miners had also to be paid a wage adequate to meet the increased cost of living, and this had a serious effect on the industry. The prices of tin for approximately the first 2½ years of war were less than the pre-war selling price, and a subsequent rise checked by the Government control, with the result that tin could only be produced under existing conditions at a heavy loss, except in the case of abnormally rich lodes. The deputation also pointed out that Government money was being paid for out-of-work donations, which would be spent to better advantage in another way. Unless the mines now working could be maintained, labour now employed must, in due course, be thrown out of work, and no work would be ready for the miners now being demobilised. In that event it was clear that very large sums of money would have to be found by the State in the shape of unemployment wages. In normal times approximately 80,000 people were engaged in the industry, but in 1917 this number had been reduced to about 5,000 by unemployment and the fact that large numbers of the men were taken for tunnelling work in France. They had done splendid work for the Army, and the deputation hoped their work would be recognised by the tin industry being maintained at its pre-war level.

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Notes and News.

De Beers.

The native labour position at Kimberley has improved to such a degree that normal hauling operations from the mines have been in progress for some little time past.

* * * *

Van Dyk.

We learn officially that there is no truth in the rumour that the Directors of the Van Dyk Proprietary Mines, the shares of which Company have recently been active on the local market, have in contemplation an amalgamation between that property and those of adjacent companies.

* * * *

Rich Ore from Ellerton.

From the Klein Letaba district comes news of a rich find of gold ore on the Golden Valley venture. The small reduction works, belonging to Mr. Ford, on that property has made a high return from a preliminary crushing, and the only question that remains to be decided is the extent of the ore body.

* * * *

Sakalava Oil.

The secretary of the Sakalava Madagascar Proprietary Oil Fields, Ltd., announces that the following cable has been received from the company's manager, Mr. Robinson, in Madagascar, dated April 7: "Depth nineteen hundred white clay. Underreaming cementing oil sand seventeen hundred and ninety-three thirty-two feet sand showing oil and gas."

* * * *

The Central Mining and Heidelberg.

According to a Reuter cable received from London, dated April 5, the Central Mining Corporation states that the reports published regarding negotiations between the corporation and Dr. Hans Sauer respecting interests of the Far East Rand are unauthorised and incorrect. Discussions of a purely informal nature took place, but terminated without any arrangement being entered into. No examination of the properties was made on behalf of the corporation.

* * * *

A Galena Discovery.

It is reported that a rich discovery of Galena has been made in the district of Marico, where large deposits have been found, whereas previously only small lodes had been come across. This also contains a quantity of cerussite. The Galena contains 80 per cent lead and 20 ozs. silver. Cerussite is used for making white lead. There is a big demand for this, which is now being opened up by an enterprising syndicate. The farm on which this deposit is found also contains a very valuable lode of felspar, which is used for fluxing, etc., and the best quality for moonstone jewellery and lenses. In addition, on the same farm is found a very valuable deposit of magnesite, which is said to be of far superior quality to anything found in the Kaapmuiden district, and this occurs in large quantities.

* * * *

New Home for the Chamber of Mines.

It will be remembered that the Chamber of Mines recently sold their present building in Market Street, adjoining the National Bank. Previously a magnificent site had been purchased at the corner of Holland and Main Streets from the General Mining and Finance Corporation. The ground is about half a block and immediately faces the south-east corner of the Stock Exchange and opposite to the east side of the General Mining offices. It is the intention of the Chamber to provide a very substantial block, if not a palatial building, to accommodate the various departments under its control. Although not authoritatively stated, it may be taken for granted that the new building will be a five- or six-storied structure, costing something well over £100,000. It is understood that this was the nearest site obtainable at anything like a reasonable price anywhere near the centre of the mining and financial community.

An Interesting Mining Enterprise.

An interesting company flotation, possibly presaging the introduction of more American capital into this country, is announced this week. This is the Middelburg Mineral Corporation, Ltd., of Middelburg, Transvaal. The company is formed to carry on import and export trade in coal, copper, iron and coal by-products. The head office is Bank Building, 3rd Avenue, New York, U.S.A.; chairman, Joseph Franzl, New York City; general manager, M. W. Skrivanek, Middelburg, Transvaal; secretary, Dr. J. U. Brett Gregor, New York. The capital is 1,000,000 dollars. If this means the application of American brains and capital to the exploitation of our mineral resources it will be a welcome addition to South African enterprises.

* * * *

A Johannesburg Museum.

The Johannesburg Museum Committee have forwarded a request to the Government asking it to consider the possibility of enlarging the scope of the Geological Museum which at present exists—it can scarcely be said to do more—in one room in the Tin Temple. In most of the countries of the world the utility of a museum which not only contains exhibits of industrial products and manufactures, but acts as an information bureau on these and scientific subjects has been realised. Johannesburg is the only large town in South Africa without such accommodation. It has been suggested that such a museum might form a part of the new university building at Milner Park and the idea is well worth consideration.

* * * *

The Falcon Mine.

At the annual meeting of the Falcon mine recently, the chairman, Mr. Prinsep, had a rather disappointing tale to tell to the shareholders. The present misfortune of the company is not wholly due to war conditions. To a large extent, of course, it is, as the price of copper has fallen very seriously and shipping facilities have been restricted. The other main trouble from which the company has suffered is an insufficiency of working capital, which necessitates constant borrowing. Mr. Prinsep gave an interesting review of the history of the undertaking, and explained that the absence of a dividend was due to the terms imposed by the lenders of the money. Copper is a heavy commodity to finance, because payment is not made until months subsequent to sales, and when to this drawback is added the fact that a sum of about £188,500 is locked up in stores and broken ore in stopes, it is easily seen that liquid funds run low. The above conditions are more or less of a temporary character, though the chairman was perfectly frank in his explanation of the position. It is interesting to note that he is not a confirmed pessimist, for he thinks that the prospects of a rise in copper are favourable, and the reasons he advances seem sound. As regards the mine itself, it is rather disappointing that the ore body at the No. 11 level compares unfavourably in length with those above it.

* * * *

New Kleinfontein Finances.

The working profit earned by the New Kleinfontein in 1918 amounted to £43,738, after deducting interest on loans amounting to £7,637, and adding £1,546, being the amount overestimated in respect of taxation for the year 1917. The balance carried forward from the previous year was £115,548, giving a total of £159,286, which was dealt with as follows: Shaft sinking, £19,762; machinery, plant, etc., £3,879; balance unappropriated, £135,645. The tonnage milled was 674,740 tons, being a decrease of 110,350 tons, as compared with the year 1917. The reasons for this heavy decrease in the tonnage milled, and a corresponding reduction of profits, were a heavy fall of rock in No. 2 main shaft; a partial flooding of the mine owing to the excessive rains; the Spanish Influenza epidemic; and the shortage of native labour, details of which have been notified to shareholders through the Press from time to time. The native labour position has recently shown a marked improvement. The estimated position of the Company's ore reserves, as at 31st

December, 1918, calculated on the same basis as at the end of 1917, is as follows: Tonnage, 2,048,000; stoping width, 59.52 ins.; stoping value, 5.78 dwts. The actual cost of development during the year has been charged direct to mining costs, and the balance of £3,600 6s. 5d., which stood to the credit of "Development Suspense Account" at the end of 1917, has been credited to working costs.

* * * *

Standard Bank.

It is evident from the dividend statement that the Standard Bank of South Africa has found the past year a very profitable one. The board is paying a dividend and bonus which work out at the rate of 16½ per cent., as compared with 15½ per cent. for 1917, following distributions of 14 per cent. for each of the preceding four years. The reserve fund is getting £200,000, there being no such allocation a year ago, and £50,000 is applied to premises account, or double the 1917 allocation, while £40,000 (against £30,000) is set aside for officers' pensions. The carry-forward is maintained at about £200,000. Last year a sum of £10,000 was applied to writing down the book value of investments, but no such provision is necessary this time, the directors remarking that the bank's investments stand in the books at less than the market value as at 31st December last. Following the practice of many other leading banks, the Standard proposes to increase its capital. The existing authorised capital is £6,250,000, and a resolution is to be submitted at the meeting on 30th April that this be increased to £10,000,000 "for issue as and when required." The shares of the bank, on which £5 is paid up, stand at 14¼—15¼ cum dividend, on which basis the yield is about 5½ per cent. Probably the new issue when it comes will provide the shareholders with a bonus.

* * * *

Mining Questions in the Assembly.

Mining questions figured largely in the Union Assembly this week. In reply to members of the Assembly, the Minister of Mines and Industries said that the question of the opening of a South African mint was receiving consideration. He added that it had been hoped that the Government might have been able to introduce a Bill during this session, but owing to the pressure of business the matter would have to stand over. Dr. MacNeillie asked whether the Minister would reconsider the question of using his right to cause the Cinderella Deep to resume working. Mr. Nathan asked whether the Minister would consider the appointment of additional mining inspectors, as recommended by Dr. De Jager in the latest Phthisis Report. Mr. Sampson raised the question of the low-grade mines, and said that the cost of labour was not the only important item. There was also the question of power. The amounts paid for power to the Victoria Falls Power Company were very high. He urged that the Minister should give this matter his serious consideration. He then emphasised the necessity of a ventilating expert to instruct the people concerned what steps they should take to improve the ventilation in the mines. Mr. Creswell asked as to how many mines on the Far East Rand had asked for an extension of their mynpachts in order to acquire so-called workable propositions under last year's Act. He contended that the country had been imposed upon by the mines adding to their areas at the public expense. The Minister of Mines said he was afraid that, with the present high cost of material, the Cinderella Deep, which had been closed, could not reasonably be expected to reopen. There was no change of policy in regard to low-grade mines. He agreed to the necessity of a ventilating expert and in view of the importance attached to the matter by the Miners' Phthisis Commission he would attend to this point. Replying to Mr. Creswell, the Minister said that one application, namely, from the Daggafontein Mine, had been received for the larger mynpacht area. Mr. De Beer criticised the large stipend of £1,650 per year being paid to the directors of the Premier. The Minister said that the Government, though being largely interested in the proceeds of the Premier Mine, had no say in the administration except that it had the right to appoint a director. This had not been done so far.

South-West Diamonds.

The South-West Diamonds Company, Ltd., have concluded the purchase of eight important diamond areas on the mainland of the South-West African Protectorate, and production of diamonds from these areas will commence almost immediately.

* * * *

Coronation Freeholds.

At the ordinary general meeting of shareholders in the Coronation Freehold Estates, Town and Mines, Ltd., held this week, the chairman said there was nothing for special comment. It would be noted, however, that, apart from depreciation written off, the revenue exceeded the expenditure by £146 2s. 10d. During the year sales of four erven in the township of Balfour had been effected. There was evidence of a better demand for erven in the township, and the board expected this would become more pronounced in the future and would synchronise with the general activity in the district. He understood that there had been a number of farms in and about Balfour and Heidelberg taken up on option with a view to prospecting, and in addition a large number of claims had been pegged. Prospecting operations and boring had been started at various points; and, whilst one heard, unofficially of encouraging reports, it was difficult to get definite information and it was yet too early to expect marked results. The board, however, felt that the future was hopeful, and that the time would come when big developments would take place in the areas referred to. And all this must reflect most favourably on the interests held by the company. Meanwhile, the board was convinced that the conservative policy at present followed was the course best suited to serve their interests.

* * * *

The Late Sir William Crookes.

The death was announced last week of the celebrated scientist, Sir Wm. Crookes. Professor Sir William Crookes, F.R.S., was born in London in 1832. In 1848 he entered the Royal College of Chemistry as a pupil of the distinguished chemist Dr. Hofman, and at the age of seventeen he gained the Ashburton Scholarship. After two years' study he became, first, junior, then senior assistant to Dr. Hofman until 1854, when he was appointed to superintend the meteorological department of the Radcliffe Observatory at Oxford. In 1855 he became Professor of Chemistry at the Training College, Chester. His earliest original researches were begun whilst at the Royal College of Chemistry, and his first paper, "On the Seleno-Cyanides," was published in the *Quarterly Journal of the Chemical Society* in 1851. Since that date he had been much engaged in original research on questions connected with chemistry and physics. In 1861 he discovered, by means of spectrum observations and chemical reactions, the metal thallium, and he also determined its position among elementary bodies, and produced a series of analytical notes on the new metal. In 1865 he discovered the sodium amalgamation process for separating gold and silver from their ores. In 1886 he was elected president of the Chemical Section of the British Association, and at their Birmingham meeting that year he delivered an address, in which he propounded some novel speculations on the probable origin of the chemical elements, showing that the balance of evidence was in favour of the view that our so-called elements have been formed by a process of evolution from one primordial matter. In 1887 Prof. Crookes was elected president of the Chemical Society, and the following year he was awarded the Davy Medal of the Royal Society for his radiant matter researches. He was knighted in 1897 "in recognition of the eminent services he had rendered to the advance of scientific knowledge during Her Majesty's reign," and in the same year he was selected president of the British Association. He was a past president of the Chemical, Metallurgical and Mining Society of South Africa, and he visited this country with the British Association in 1905. He published his notable work on "Diamonds" in 1909. A member of scientific societies all the world over, Sir Wm. Crookes was one of the most distinguished scientists of the age.

TOPICS OF THE WEEK.**NEW MINERS' PHTHISIS LEGISLATION.**

SEVERAL important facts have been elicited in the course of the debate on the new Miners' Phthisis Bill this week. The Bill has been referred to a Select Committee with, as one correspondent put it, "an implied instruction to consider, along with the problem of eradicating the disease, how the benefits to patients may be increased." And this, it must be remembered, means an increase on the already augmented scale of compensation proposed in the Bill introduced last week by the Minister of Mines, following the lines of the Bill drafted by the Chairman of the recent Commission on the subject. The debate on the Bill—contributed to chiefly by the Minister, by Sir W. van Hulsteyn, and by Mr. Sampson and Mr. Duncan—merely served to emphasise the differences in the views put forward in the three reports of the Commission, referred to in our last issue. The Government Bill adheres very closely to that drafted by the Chairman of the Commission, Sir W. van Hulsteyn, and those that signed the report with him. In regard to the method of calculating benefits, the Bill adheres to the present system. Mr. Sampson, in his speech as in his report, suggests a method based upon the earnings of the beneficiary. The Government Bill proposes a cash payment of £200 to miners in the "ante primary stage," that is to say, before they are seriously affected by silicosis; an award of £375 in the "primary stage"; and a pension ranging from £10 to £15 per month in the case of miners whose earning capacity has been "seriously and permanently impaired." Mr. Sampson proposes that in the "ante primary" stage the miner shall receive a year's wages as an inducement to seek other employment; in the primary stage he shall be awarded two years' average earnings; and in the final stage of the disease a pension calculated on his earnings. The costs involved in the additional benefits proposed under the Government Bill are estimated to amount to £520,000 in the first year and £430,000 in the second. The Sampson report's recommendations are on a considerably more liberal scale, and graded on the miner's earnings. They involve new grants of about £820,000 for the first year and about £680,000 for subsequent years. If the proposed payments are made retrospective, as is recommended, a further initial charge would be involved of £160,000 in the one case and £1,200,000 in the other. This heavy additional burden on the mining industry—for it is heavy even on the scale proposed in Mr. Malan's Bill—raises the question of contributions. The insurance fund is now maintained by contributions from the employers at the rate of 5 per cent. on the underground wages paid in the industry, and from the employees at the rate of 2½ per cent. Mr. Sampson and his friends seem bent on remitting to the miners even this small contribution, despite the strong arguments that have been adduced in favour of its retention. The foregoing questions concerning the extent of the proposed increases in the scale of compensation and the miner's contribution seem to be those upon which the Select Committee will have most difficulty in coming to a decision. The views of those responsible for the running of the mining industry are now well known on both matters. The actual inability of the industry to take on fresh burdens, it is to be hoped, will not have to be demonstrated. The Minister of Mines seems satisfied about the facts, though he still seems to forget that not only the Rand but the whole country must suffer if more mines are to close down. The suggestion is made in some quarters that the Government should postpone its taxation of the low-grade mines to the phthisis compensation levies. After all, the order in which the various taxes are imposed matters little provided the mines are not taxed out of existence. That, for most of them, is the issue with which they are faced; and their fate, as cannot too often be emphasised, is the concern of the whole Union. It is to be hoped that this consideration will prevent the latest Select Committee from being rushed into any "panic" or hasty decisions on the momentous questions at issue.

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THE PRETORIA IRON WORKS.

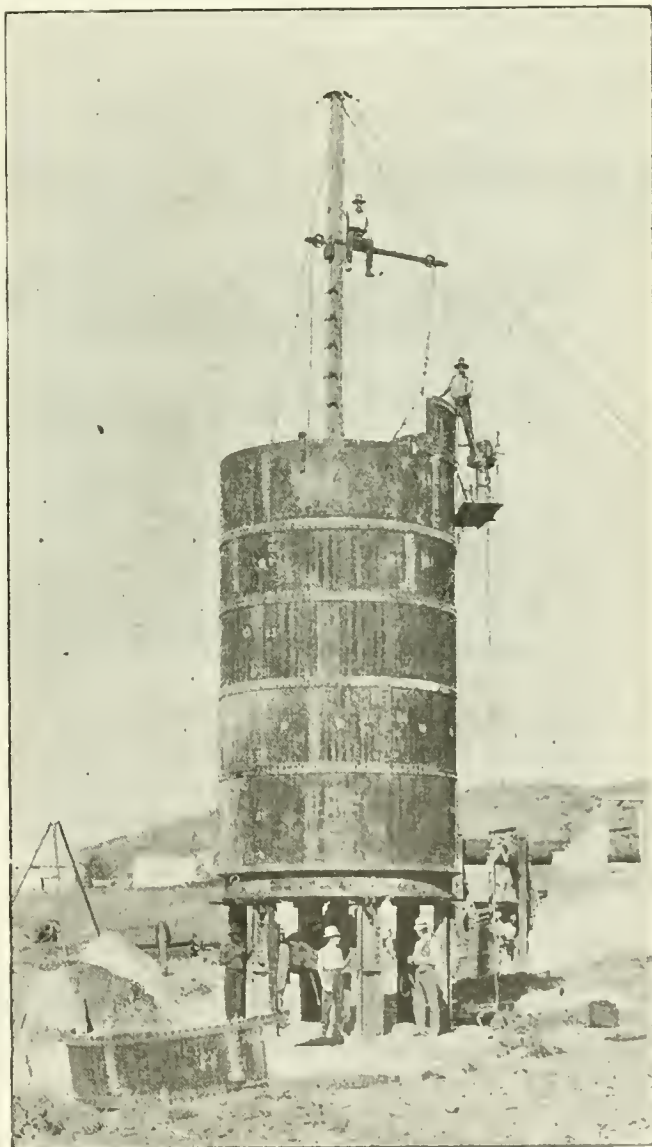
A New and Successful Industrial Enterprise—Brief Description of the Blast Furnace and Plant—An Inexhaustible Ore Supply and Simple Metallurgical Conditions.

"History has shown that the progress of a State stands almost in direct proportion to its iron and steel industries. There is no doubt whatever that the power of Great Britain rests to a large extent upon its iron and steel works, and that the United States would not have a population of over a hundred millions if it had to import its iron and steel goods. We feel sure that in the future development of South Africa iron and steel will play an important part." It is with these words that Messrs. H. Bohle, M.V.D.E., M.I.E.E., Professor of Electrotechnics at the South African College, and C. D. van der Merwe, B.A., Ph.D., Professor of Chemistry at the Victoria College, Stellenbosch, enter upon a discussion of an iron and steel industry for South Africa in one of the early issues of the "South African Journal of Industries." In referring to the part to be played by these metals in the future development of this country, they might well have said that it would be an essential as well as an important one. Diamonds, gold and the other products which have together laid the foundations of a large white population in South Africa and established an admirable and widely extended system of railway communication have brought us to the stage where genuine and lasting industries can take their starting point. With the enormous iron deposits of the Union, its vast fuel resources and its abundance of the necessary fluxing materials it was only to be expected that the manufacture of iron and steel would attract the attention of those who are able to foresee the industrial possibilities of the future in South Africa and quick to appreciate the opportunities of the moment. Since the beginning of the war the various problems connected with the establishment of iron and steel productions in this country have been discussed at length in various journals and at meetings of different technical societies, and several years before that the Government had obtained expert advice with reference to the prospects of such an enterprise within the Union. In the meantime steps were taken by a few practical men to prove definitely that the matter could be carried beyond mere academic discussion, and furnaces for the production of pig iron, the foundation of a future national industry, were erected at Pretoria and Vereeniging by the Pretoria Iron Mines, Ltd., and the Transvaal Blast Furnace Co., Ltd., respectively. The latter company, however, was the outcome of an undertaking which had made contracts to purchase Government scrap and manufacture it into steel products. The testing of iron ores from various parts of the Transvaal and the erection of a blast furnace more or less on an experimental basis followed later, and we understand that work there is still largely of an investigatory character. The Pretoria Iron Mines, Ltd., on the other hand, began operations upon iron ore directly. It was an undertaking that was confronted by many difficulties and much risk and directly for productive purposes, and a great deal of credit is due to those concerned for the courage with which they attacked their problem. It is gratifying to be able to say that the chief difficulties have been satisfactorily overcome, the element of risk has apparently been eliminated, and a pig iron of very good quality is being turned out upon a scale that justifies the announcement that the iron industry that is to inaugurate a new era in the history of South African economic progress has found a beginning within sight of the Union Buildings at Pretoria.

THE BLAST FURNACE AND ACCESSORY PLANT.

The first blast furnace erected by the Pretoria Iron Mines, Ltd., was favourably started on its career of production on the 15th July, 1918, when the Chairman of the company, Mr. A. C. Romayn, in the presence of an interested group of visitors, applied a torch to the fires. "The progress of this industry, the first of its kind ever attempted in the Union," said the "South African Journal of Industries"

in August last, "will be watched with much interest." During the early stages work was mainly confined to a practical study of the results obtained from the ores and fluxes employed in producing the pig, and in making the various adjustments that were found necessary from time to time. Matters progressed favourably until the influenza epidemic made it difficult to continue. During the temporary cessation of work that ensued it was decided to extend the blast furnace, and the necessary alterations were taken in hand as soon as possible. On Tuesday the 18th March last, at 6 p.m., the new furnace was blown in, and at 11 p.m. the following night some 1½ tons of metal were drawn off. Since then production has been continuous. An accompanying photograph shows the character and arrangement of the blast furnace and the necessary plant. The furnace is 56 feet 6 inches in height, from the level of the hearth to the platform plates, while the well below is 4 feet 6 inches in diameter. The bosh diameter, inside, is 9 feet, and the shaft of the furnace at the charging level 6 feet. In the shed immediately behind the furnace are the compartments for ore, lime, and coke respectively, while more to the right is the engine room, where a compressor has been installed for blowing purposes, together with a motor and engine for generating electric light. At the extreme left of the picture,



THE BLAST FURNACE UNDER CONSTRUCTION.

and adjoining the engine room, is the boiler house with two Babcock and Wilcox boilers of 100 h.p. each. Adjacent to the blast furnace, on the left hand, will be seen the heater through which the air is circulated from the blower on its way to the tuyere. The hot waste gas from the furnace is taken off just below the platform and led through a brick-lined "down-comer," which has six explosion doors for safety, at the side of the blast furnace as shown, and burnt in the heater. The air blast is thus raised to a high temperature before being forced into the furnace charge at a pressure of about $2\frac{1}{2}$ lb. per square inch. It is proposed to divert some of the waste gas for use in the laboratory. The basin at the top of the furnace takes a charge of about two tons of ore, lime and coke combined, which is discharged at intervals as required by the lowering of a "bell" worked by a rack and pinion arrangement at the front edge of the platform. The latter, by the way, has a diameter of 20 feet. On its rear side, as it appears in the illustration, is a hoist, driven by a small steam engine, by means of which the barrows are raised and lowered to the charging floor. A special feature of the blast furnace is that it has been constructed entirely of materials collected in this country, some of which have been used for other purposes. The steel plates which surround the lower part of the furnace, for example, were formerly loco boiler plates which have been re-shaped to the required diameter. The firebricks have come from Olifantsfontein and Boksburg. A similar statement applies to the blowing engine, which is said to have been originally a compressor unit on a Langlaagte gold mine. It has a capacity of about 3,000 c.f. per minute. The blast furnace has the usual cooling arrangement at the bosh level. The water therefor comes in the first place from a borehole 130 feet in depth adjacent to the works. There is an ample supply, the water being cooled and used over again, but later on a large dam with a capacity of 82,000,000 gallons

is to be constructed, and this will provide an abundant reserve for all purposes. It may be added that a well equipped laboratory with substantial offices and quarters are situated near the works. The accompanying photograph of the plant was, as a matter of fact, taken from the verandah in front of these buildings. A branch line of railway connects the site with the main line from Pretoria to the north, and materials and stores are thus delivered conveniently into the works. The smaller photograph shows the blast furnace in course of construction.

THE ORE, COKE AND LIME.

The ore is a mixture of siliceous and clay-band ores from the lower portion of the Pretoria series. According to Dr. P. A. Wagner, B.Sc., Ing.D., who, with Professor George Stanley, A.R.S.M., F.I.C., of the South African School of Mines and Technology, was engaged on much of the preliminary scientific work of the undertaking, "the siliceous ore, an arenaceous oolitic ironstone, in which most of the iron is present as martite, assays from 40 to 54 per cent. of iron and from 14 to 22 per cent. silica, sulphur and phosphorus being both very low, and titanium present in traces only." The "clay-band" ore assays from 50 to 55 per cent. of iron, from 7 to 9 per cent. of silica and from 0.5 to 0.6 per cent. of phosphorus. Both types of ore can be very cheaply mined, and are available in enormous quantity, millions of tons of the siliceous ironstone being actually in sight." For practical purposes, indeed, the ores may be said to be inexhaustible. By mixing the siliceous ore with the more basic "clay-band" a minimum flux requirement is obtained. The ore beds lie within a comparatively short distance of the works, the siliceous seam being distant not more than about three or four hundred yards of the blast furnace site. Coke is obtained from the Bernicia Colliery in Natal, and limestone from Taungs and from a quarry within

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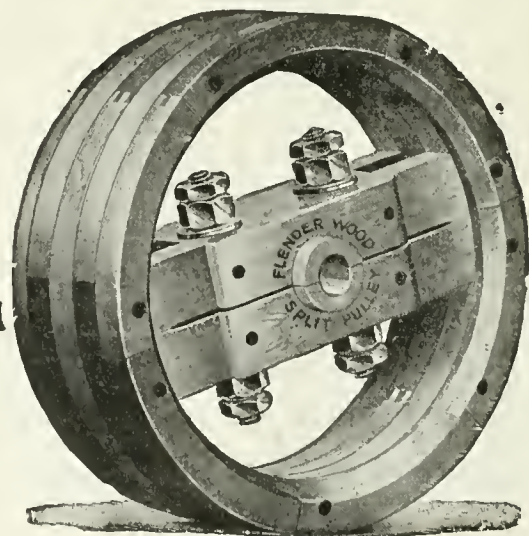
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six miles of Pretoria. Later on it is expected that considerable economies may be effected in the cost of these materials. For instance, with regard to coke, it may be decided to erect by-product ovens on the property, and if the city of Pretoria is sufficiently alive to the advantages of using gas for domestic and other purposes, a scheme of this kind would not only cheapen the item of fuel but secure an excellent subsidiary revenue to the company. In addition to the economies to be effected in the cost of the coke and flux there is, of course, a prospect of reduced cost in the quantities of these materials that will be required per ton of ore as the process continues to be improved upon.

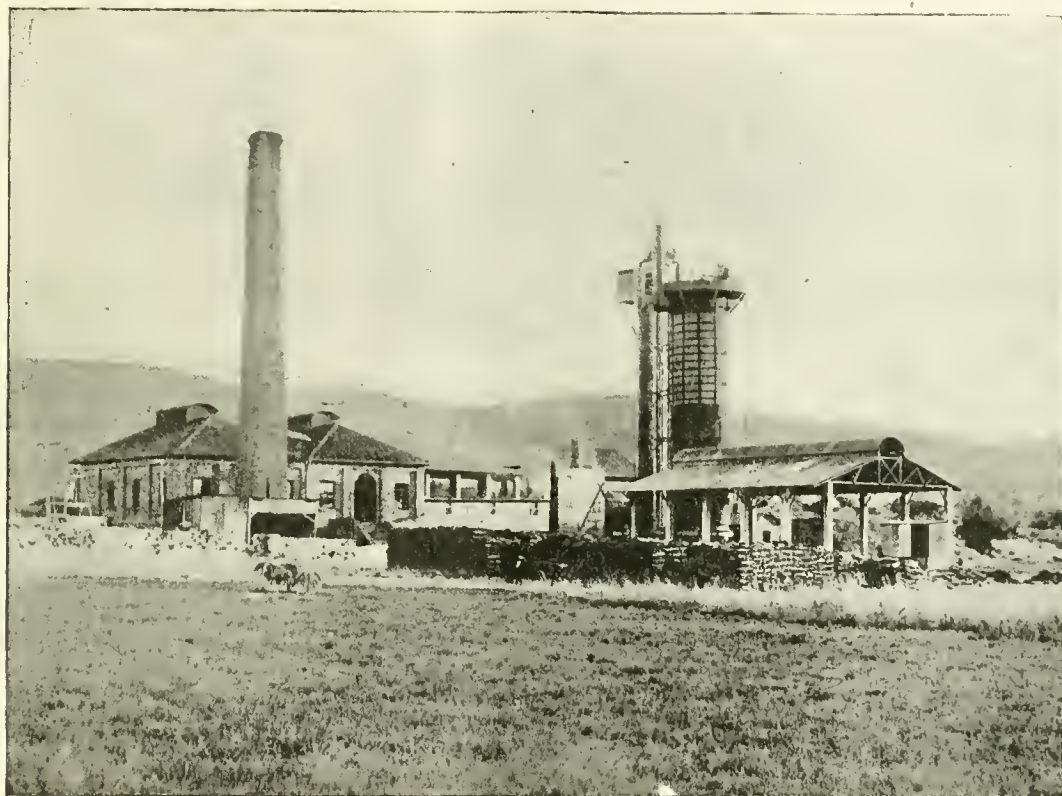
THE PRESENT POSITION.

The production of pig iron of good quality, suitable for most of the industrial purposes to which this metal is applied for South African use, is then an accomplished fact at Pretoria. Difficulties have been overcome and an iron industry has been established. Although the scale of operations is

South African market, which is probably worth, in manufactured articles, several millions of pounds per annum to-day. In the building of a new industry of any kind much depends upon the ability and resource of those who are first in the field. The brief but creditable record of the operations of the company during the last year or two sufficiently proves their possession of these qualities. In this short summary of the work of the Pretoria Iron Mines, Ltd., it is fitting to mention those by name who have contributed to the successful issue of a very courageous and praiseworthy undertaking.

A PERSONAL NOTE.

Since 1910 Mr. C. F. Delfos has been investigating the possibilities and from reports from Sweden he came to the conclusion that the Pretoria ores were suitable. He approached the Government repeatedly to investigate the matter on a large scale, but his suggestions were turned down on every occasion. In 1917 he obtained a concession from the Pretoria Town Council, on a site 500 acres in extent, containing roughly 30,000,000 tons of ore. A small company was floated and the directors were Mr. A. C. Romyn (chairman), Sir Thomas Cullinan, Messrs. T.



THE PRETORIA IRON WORKS TO-DAY.

at present a small one there does not appear to be any limit to its possibilities beyond that of the demand for its product within the Union itself. The ore, as has been pointed out by the engineers who have examined the deposits, is practically inexhaustible; metallurgical conditions are comparatively simple, and the facilities for mining cheaply and upon a large scale are all that could well be desired. As a centre for obtaining the necessary materials and for distributing the product rapidly and conveniently to all parts of South Africa Pretoria offers many advantages. Taking all the economic factors of the undertaking into due consideration, it may be said that the opportunities for expansion upon large and sound lines should not be long in presenting themselves. The experience already gained will prove valuable in these circumstances. The high quality of pig iron which the company is producing at present will enable the Pretoria Iron Mines, Ltd., to command a large share of the

Reunert, H. C. Jorissen, C. J. Clark and C. F. Delfos, managing director. All these gentlemen have by their energy and financial help assisted in establishing this industry. A word of appreciation is also due to the staff. Mr. W. Wallace is the manager, and he had previous experience in Scotland. None of the others had anything to do with blast furnace work before, and it is certainly a credit to Mr. Exter, the chemist, who is an old School of Mines student, that the efforts have been crowned with success. Professor G. H. Stanley is the metallurgical adviser, and Mr. F. C. Delfos is the assistant manager. Finally, a word should be added about the workmen on the plant. With the exception of the three furnace keepers, all the men are new to the work. The furnace keepers had previous experience in England, Scotland and Wales, and it is only fair to add a tribute to the great perseverance and loyalty to their work of these men whose efforts have in no small measure gone towards making it a success.

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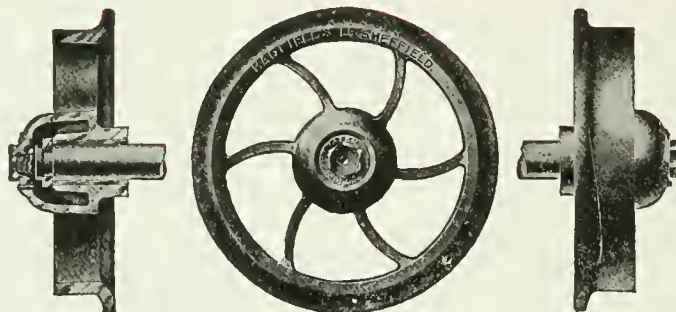
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THE GREATER HEIDELBERG GOLDFIELDS.—VIII.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

The Township of Balfour and its Surrounding Strata—Why Past Prospecting Did Not Succeed—Carrick, Hoffmann and Hamilton Locate the True Line—The Southern Rim of a Gold Basin—Work on the Malanskraal-Wilgepoort Line—A Complete and Perfect Geological Section—Correlations with the Far East Rand—The "A" and "B" Reefs—Prospects of the Far East Rand (South) G.M.S. Co.—A Concern with Excellent Prospects—Malanskraal and the Wilgepoort Syndicate.

In the seventh and preceding article of this series our survey carried us along the line of reef exposed by the Southern Rand Mines Syndicate to the south-west of Heidelberg, which has been identified by the late Dr. Constorphine as an extension of the Nigel or Main Reef Leader. These properties are now being reported on by other well-known local mining engineers. In continuation of our examination of the probabilities of proving a lengthy extension of the highly profitable ore bodies being worked on the Far East Rand gold field, we must now shift the centre of our investigations from Heidelberg to Balfour and focus attention on the geological features which surround that rising township.

THE TOWN OF BALFOUR.

Balfour (previously termed McHattiesburg and Vlaktefontein) lies about 17 miles as the crow flies to the south-east of Heidelberg. The township is located on the main Natal railway line and is the centre of a prosperous agricultural community. Balfour itself is a well-laid-out and thriving township. A small branch line forks off from Balfour to the Grootvlei Collieries, and it is reported that the Railway Administration have the construction of another line to the Free State in view. This branch line would traverse one of the most fertile areas of the Transvaal, and the future of Balfour as a centre of agricultural industry is assured. But there are also most unmistakable evidences of mineral wealth in this region, and we shall not be surprised if Balfour becomes the centre of a flourishing outpost of the gold mining industry within the next few years.

A SUBSIDIARY BASIN.

This area in common with most of the other sections of the Greater Heidelberg gold fields has been extensively prospected in the past, but it does not appear that the main geological features of this field were appreciated until recently. The Witwatersrand beds occur in the Balfour area in the form of an outlying basin, of which the southern rim is now being prospected along the line of the farms Malanskraal No. 73, Driefontein No. 280, Tweefontein No. 98, Rietfontein No. 241, Wilgepoort No. 244, and Daspoort No. 120.

AN INTERESTING SECTION.

A complete section of the Witwatersrand lower and upper beds in their proper and ordered sequence forms a very outstanding and favourable feature of this area. The section from the basal granite up to the Elsburg beds which can be clearly observed in this locality is in every degree comparable with a section through the heart of the rich Far East Rand area, across the stratigraphical line on which the great Modderfontein mines are working. The completeness and perfect sequence of the various formations which make up this section have impressed a number of leading geologists and engineers most favourably. The only striking difference to be noted between a section across the Malanskraal-Wilgepoort line and a section across the Far East Rand is a difference in the thickness of the beds. This difference would account for mistakes which have been made in the past in prospecting this section of the country.

THE "KIMBERLEY" GROUP.

The most prominent reefs outcropping on Wilgepoort are the Kimberley reef group, which reefs attain in places great widths, from 20 to 30 ft., and generally pay gold. There are eight banket beds in this series within 200 ft., and two more some 500 feet on the dip. The Kimberley shales outcrop where their banded structure attracts the eye. It was on the Kimberley group that most work was done in this area in the past, it being taken for Main Reef Series from the early days of the gold fields by prospectors and mining engineers. Numerous shafts have been sunk on the different reefs, and a number of boreholes have cut the reefs in depth, showing most encouraging values. On Wilgepoort a borehole under the direction of the late Dr. Carrick and J. G. Hoffmann cut two reefs, one at 908 feet, 15 inches wide, assaying $11\frac{1}{2}$ dwts., and one at 953 feet, $30\frac{1}{2}$ inches wide, assaying $6\frac{3}{4}$ dwts. On Daspoort a borehole put down under the direction of Mr. J. H. Davies also cut two reefs, one at 2,024 feet, $17\frac{1}{2}$ inches wide, assaying 15.4 dwts., and one at 2,461 feet, 30 inches wide, assaying 7.83 dwts. This latter borehole was carried down to 2,715 feet, where it cut a shale bed. On the lower beds a lot of shafts and boreholes have tested the shale-sandstone contacts looking for the Nigel Reef, and a small pebble banket reef from 12 to 30 inches wide is very persistent along this line. The attenuation of the strata and the prominent development of the so-called Kimberley series appear, however, to have misled the earlier searchers after a payable extension of the Far East Rand gold fields in this outlying area. The late Mr. Laurie Hamilton directed a considerable amount of work on two big pebble reefs which are now ascribed to Kimberley horizon, and in places he appears to have encountered good values, assays as high as 35 dwts. over 6 inches having been obtained along this line.

ALONG THE STRIKE.

Proceeding from west to east, the line of strike of the formation appears to be east and west through Malanskraal, Driefontein and Tweefontein, the dip being to the north. Across Wilgepoort the formation runs with a north-west south-east line of strike and a dip to the north-east in undisturbed country, and thereafter this line is maintained on Daspoort although on this latter farm there are evidences of faulting and a substantial displacement of strata. To the east and south of Daspoort the formation is overlain by Karoo measures which are being worked on Grootvlei by the South Rand Exploration Company's colliery. Leaving Balfour a short drive to the south takes one to the line of banded ferruginous slates (often contorted and magnetic) which so markedly resemble the well-known Hospital Hill slates of the Central Rand, a characteristic formation, the value of which as a marker geologists are all agreed on. Traversing the formation from this horizon one cannot fail to be impressed with the ordered sequence of the various beds and their unmistakable similarity to a typical section across the Far East Rand. At several points along this line trenches and cuttings have exposed reef formation and in some places shafts and diamond drill holes have penetrated to a substantial depth.

THE WILGEPPOORT WORKINGS.

But it is not until one has crossed the big vlei on the southern portion of Wilgepoort that important work is to be observed. From the vlei the ground rises fairly steeply up to the line of kopjes below which the prospecting camp of the Far East Rand South Company is located. This company, which has a nominal capital of £75,000 in ten shillings shares, is styled the Far East Rand (South) Gold Mines Selections, Ltd. (to give it its full title), owns 509 claims on Wilgepoort No. 244 and has been quietly prospecting this property for some months past under the management of Mr. J. A. Thorburn. The claims held run for about two miles along the out-rop and the depth of the area held is from six to ten claims on the dip. A great deal of intelligent work has been done here along a line of reefs lying immediately to the south of the prospecting camp. After all the failures of the earlier days it remained for the late Dr. Carriek and Mr. J. G. Hoffmann and the late Mr. Laurie Hamilton to divert prospecting work on to the line at present under exploitation. Their efforts resulted in the opening up of two basket reefs which were reported as being "40 feet and 120 feet away from the shale contact." At this point it may be well to denote the stratigraphical features of the Wilgepoort section in detail, as exhibited on the property of the Far East Rand (South) Company.

A SECTION ACROSS WILGEPPOORT.

Commencing then from the uppermost beds underlying the Elsburg series and travelling south-westwards back to the contorted slates of the Hospital Hill horizon, the stratigraphical section is as under:

Blue Reefs (two reefs upper Kimberley).
600 ft. pink sandstones.
Lower Kimberley series (two big reefs and four leaders).
160 ft. sandstones.
200 ft. shale (Kimberley).
350 ft. sandstones.
Chines Reef.
300 ft. sandstones.
B. Reef, 2 ft. 6 in.
90 ft. sandstones.
A. Reef, 2 ft.
3 ft. bastard reef.
70 ft. sandstones.
Van Ryn shale.
25 ft. pebbly sandstone.
1 ft. Nigel Battery Reef.
275 ft. sandstones.
Nigel Reef.
400 ft. Nigel shale.

From the bottom of the Nigel shale to the top of the Hospital Hill slates is 5,500 ft. The nomenclature expressed in the above may be arbitrarily regarded, but we are fairly certain of our premises when we state that the reefs A. and B. which are now being developed on the Far East Rand South are correlative to the reefs now being worked so profitably in the great mines of the Far East Rand. This view is held by a number of prominent geologists and mining engineers, so that the Far East Rand (South) Company has plenty of stratigraphical justification for prosecuting work on their property. The series containing the A. and B. Reefs exhibit a dip of about 30 degrees to the north-east and the whole reef section shows a thickness of 1 ft. 6 in. with a "bastard" footwall. In this respect the section exhibits a striking stratigraphical similarity to a section at the May Consolidated mine. The reefs have been opened up for a distance of 5,000 ft., whilst one shaft had, at the time of our representative's visit, been sunk to a depth of 100 ft. and another shaft on the "South Reef" to a depth of 70 ft. In each of these shafts the reef is showing as a strong and well-defined ore body, and we should like to see the company in possession of sufficient working capital to demonstrate the existence or non-existence on Wilgepoort of large pay shoots similar to those worked on the Far East Rand.

THE VALUES.

More important from the commercial point of view than the geological aspect is, of course, the question of the gold contents. In this respect the company is favourably circumstanced. Since our representative's visit further development has been undertaken, and the latest assays are as follows: No. 1 shaft at 150 feet: Sample No. 1 over 25 inches, 12.2 dwts.; sample No. 2 over 14 inches, 12.3 dwts.; sample No. 3 over 14 inches, 9.3 dwts.; sample No. 4 over 25 inches, 6.6 dwts. Drive (west): Sample No. 5 over 12 inches, 21.4 dwts. We understand that good results have also been obtained on the ground of the Wilgepoort Syndicate adjoining the Far East Rand (South) property and also on Malanskraal, where a large ore body which is correlated with the A. Reef worked on Wilgepoort has been opened up.

A PROMISING OUTLOOK.

We understand that the Far East Rand (South) Company has an ambitious scheme of development in contemplation. The results secured to date certainly seem to indicate the company is in possession of a most promising outlier of what has been termed the legitimate Rand, with every indication of the persistence of the reef in depth. The concern is favourably situated in regard to the railway, and with a good coalfield lying within a few miles of the workings there should be ability to operate at a satisfactory rate of working costs.

(To be continued.)

CORRESPONDENCE AND DISCUSSION.

The Apprenticeship Question.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—In the March 29th issue of your Journal, page 108, at foot of second column, appears a paragraph anent State-aided apprenticeship. I am interested in this matter. My son, while serving his apprenticeship with the Westinghouse Co., London, in 1916, joined up with the Springboks in that year and has been with them ever since. We are now trying hard to get him demobilised, so that he may return to his apprenticeship with all speed, and on his behalf I would like to secure the benefits of the State's aid. Perhaps you could inform me where I could learn more about this State aid.—Yours, etc.,

A. W. E.

Box 727, Johannesburg.

April 9th, 1919.

[As we explained in the paragraph in question, the scheme applies only in Great Britain, and the Westinghouse people would probably be able to give our correspondent the desired information.—Ed.]

PERSONAL.

The list of certificates issued by the Mines Department for the period ending 31st March, 1919, is as follows:—
Mine Managers' Certificates (Metalliferous): T. Bennallack, F. J. Brink, R. H. Flynn, B. C. Forrest, T. H. Harris, W. A. Harris, J. M. Kellett, A. Rose-Innes, C. H. Wackrill, P. H. Wright; (Coal): S. W. Barlow (non-fiery mines only), J. Canning, J. W. Parker, W. Rogers, J. Williamson. Mine Overseers' Certificates (Metalliferous): J. H. Armstrong, D. Arnott, J. H. Brokenshire, W. F. de Jager, R. E. L. Hosking, E. A. Jackson, A. K. Jeffrey, G. C. Jones, H. F. Levery, H. E. Love, G. McClelland, D. McLean, J. McMinch, T. S. Millington, A. P. Oates, J. Rothman, F. Rule, J. L. Smith, J. L. L. van Walbeek (Coal), T. Graham (Service), G. Harris, R. W. Jones, H. Maxwell, R. Taylor, W. Watson. Mine Surveyors' Certificates: K. C. Abbott, Van R. van Nickerk. Mechanical Engineers' Certificates: W. Ainsworth, C. A. Batchelor, J. H. Bower, A. de V. Gibson, J. Hannah, S. J. Ladegaard, J. E. G. H. Langeveld, J. Lyall, M. Simons, S. C. Smith, L. B. Sparks, A. J. Spearman, A. Thompson, T. Tucker, A. R. Walsh, T. W. Wrightson. Electrical Engineers' Certificate: C. E. H. Demman.

THE RAND'S ORE RESERVES.

The Stock in Trade of the Industry at Date—Figures for Mines—Immense Tonnages of High Grade Ore Developed on the Far East Rand—Exhaustion of Tonnage in some of the Older Properties—The Four Modders Possess 25,250,000 Tons, Worth Approximately £44,000,000.

HEREUNDER we present a table exhibiting the tonnages of pay ore developed in Witwatersrand mines and the values of these tonnages according to the most recently issued technical reports. The list is not quite complete, inasmuch as reports from several important mines (notably those under General Mining and Finance control) are not available at the moment of writing. The schedule reproduced hereunder exhibits in convenient form the ore reserves (or, as they may well be termed, the stock-in-trade of the industry) as at the end of last year or at the nearest date thereto where companies with financial years not corresponding with the calendar year are concerned. The tonnages given in the appended statement relate to fully developed and sampled blocks of ore unless otherwise stated, and it must be borne in mind that in every mine there are very large tonnages of ore which are below the present limit of payability but of which large quantities would assume a profitable value if working costs could be reduced substantially. It may be noted that the four Modderfontein mines (New Modder, Modder B., Modder Deep and Modder Government Areas) possess between them over twenty-five and a quarter million tons, worth about 8½ dwts. per ton, representing an aggregate value of approximately £44,000,000.

CENTRAL MINING CORPORATION.

	Tons.	Value, dwts., per ton.	Inches.
City Deep	3,342,700*	9·6	—
Crown Mines (1917)	8,988,000	6·3	—
Durban Roodepoort Deep... ..	1,078,500	6·5	—
East Rand Proprietary	2,268,000	6·5	—
Geldenhuis Deep	1,549,600†	5·9	—
Modder B.	3,378,000	9·2	62
New Modderfontein	9,000,000	8·6	—
Rose Deep	2,909,520	5·3	—
Village Deep	2,327,200	6·3	—

JOHANNESBURG CONSOLIDATED INVESTMENT GROUP.

Consolidated Langlaagte	2,103,000	6·2	51
Ginsberg	59,194	5·7	51
Government G.M. Areas	9,445,000	8·0	78
Langlaagte Estate	1,036,200	6·9	52
New Primrose	65,690‡	6·1	49
New Unified	180,840	6·5	46
Randfontein Central	4,254,000§	6·8	50
Van Ryn Deep	2,415,759	9·0	70
Witwatersrand	1,390,000	6·0	71

CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA.

Knights Deep	1,671,000	4·43	—
Jupiter	674,000	5·98	—
	76,000¶	1·8	—
Simmer and Jack	1,538,000*	5·67	—
	211,000	4·98	—
Simmer Deep	932,000*	5·02	—
	42,000¶	5·15	—
	225,000	Low grade	—
Sub Nigel	387,000*	10·3	—
	36,000¶	9·8	—
Robinson Deep (1917)	1,725,000	6·43	—
	131,000¶	6·52	—

* 306,000 tons not available for stoping at present.

† 436,100 tons, value 6·1 dwts., not available for stoping at present

‡ Also large tonnage of doubtful ore.

§ Stopping Tons.

¶ Partially developed and indicated value.

* Mine tons.

UNION CORPORATION.

Geduld	2,510,000	7·5	61
Modder Deep	3,150,000	8·8	78
Princess Estate	380,000	7·2	37

ANGLO-FRENCH.

New Kleinfontein	2,048,000	5·78	59·52
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CONSOLIDATED MINES SELECTION.

Brakpan Mines	2,718,000	8·7	68
Springs Mines	2,368,000	9·3	61

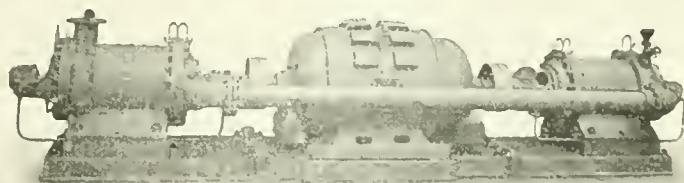
Tanganyika Concessions.

The copper output of this Company for January, 1919, was 1,487 tons.

A new Bulawayo industrial enterprise that has had a good start and shows promise of very considerable development is that recently established by the new company which bears the title of Foundries, Ltd., says the *Bulawayo Chronicle*. At the head of the concern as managing director is Mr. Trevemion, who is well known in mining circles in Rhodesia, and Mr. J. Clack, of Clack & Co.

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THE YEAR WITH THE NEW KLEINFONTEIN.

Points from the Consulting Engineer's Report.

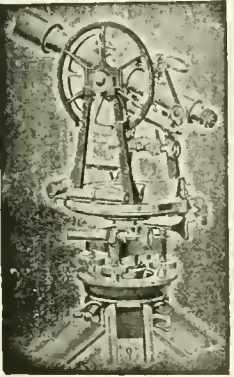
In his report on the operations carried out at the New Kleinfontein Company's mine for the year 1918, Mr. E. J. Way, the consulting engineer, writes:—For full details of the above operations I beg to refer you to your acting manager's report, wherein all important matters in connection with the running of the mine are carefully set forth. The principal features with which I propose to deal are as follows: (1) Results of development; (2) results from reduction works; (3) general labour position; (4) general. (1) Results of development: The annual re-estimation of the ore reserves shown that on the 1914 basis there were developed 2,595,000 tons of an average mining value of 5.11 dwts. over 58.80 inches stope width. On account of the abnormal conditions in connection with the cost of stores and labour, etc., under which the mine is at present working, the fixing of the limit of value at which ore may be fairly considered to be available as payable ore reserve is a matter of great difficulty, and the table given below has been prepared with the purpose of showing the amount of ore estimated to be available on various pay limits and the estimated recovery value after making due allowance for sorting and for recovery losses.

Pay Limit.	Ore Reserves Tons.	Average value. dwts.	Average stope width. Inches.	Estimated Recovery value per ton. s. d.
3.76 dwts.	2,595,000	5.41	58.80	26 6
4.01 ..	2,226,000	5.65	59.04	27 8
4.26 ..	2,048,000	5.78	59.52	28 3
4.51 ..	1,815,000	5.96	60.60	29 2
5.01 ..	1,437,000	6.28	61.92	30 9
5.51 ..	940,000	6.82	62.04	33 5

The above figures of estimated recovery value pertain to the ore reserves only, the actual screen value of mill ore depending upon the amount of reclaimed ore milled together with ore from development faces as well as upon the percentage of waste actually sorted. The above figures are calculated upon a sorting basis of 18 per cent. (2) Results from reduction works: During the year under review the milling policy was changed to meet the mining conditions, owing to the varying native labour supply. During the last quarter of the year it was decided to run the western plant up to its full capacity, and supply the eastern plant with the balance of any ore available. In this way the total western plant reduction costs, including transport, were reduced to 3s. 9d. per ton, and further saving was made by initiating this policy owing to the slightly higher extraction obtainable at the western mill, and to the high costs at the eastern mill, as that mill was not running at its full capacity. The extraction of the gold from the ore sent to the mills amounted to 95.67 per cent. of the total contents. (3) General labour position: The native labour position has

been precarious throughout the year. A very great improvement showed itself in the second quarter, during which period you had 85 per cent. of your underground complement. The influenza epidemic had begun to make itself felt in September reducing that percentage to 62.8 per cent. in December, and, as shown in the manager's report, in consequence of the conditions above referred to, your company's reduction plants during the year only dealt with a tonnage equal to 68 per cent. of their full capacity, and this position accounts for the loss made on working account during the last quarter of the year, during which the shortage of native labour was most acute. (4) General: The year under review has been an exceedingly difficult one. The floods and the influenza epidemic accounted for a loss in tonnage milled of about 130,000 tons for the year. During the whole of these unfortunate periods it was quite impossible to reduce the establishment charges without gravely interfering with general efficiency, consequently the decreased tonnage had to bear this expenditure, which, if it could have been allocated to a tonnage of 800,000 tons, would have shown a position from a financial point of view which would have been satisfactory, other things being equal.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.



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INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- April 22.—Princess Estates, at 3 p.m.
April 23.—Modder Deep Levels, at 10 a.m.
April 23.—Geduld, at 3 p.m.
May 20.—S.A. Land and Exploration Co., Ltd.—Sixteenth Ordinary General Meeting, 38, Meischke's Buildings, at 12 noon.
May 23.—West Springs, Ltd.—Second Ordinary General Meeting, at 10.30 a.m.
May 23.—Daggafontein Mines, Ltd.—Fourth Ordinary General Meeting, at 11 a.m.
May 23.—Springs Mines, Ltd.—Tenth Ordinary General Meeting, at 12 o'clock.
May 23.—Brakpan Mines, Ltd.—Sixteenth Ordinary General Meeting, at 2.30 p.m.
May 23.—Rand Selection Corporation, Ltd.—Twenty-seventh Ordinary General Meeting, at 3.30 p.m.
May 23.—New Era Consolidated, Ltd.—Seventh Ordinary General Meeting, at 4.30 p.m.
May 27.—New Primrose G.M. Co., Ltd.—Annual Ordinary General Meeting, at 12 o'clock.
May 27.—New State Areas, Ltd.—Second Ordinary General Meeting, at 12.30 p.m.
May 27.—New Unified Main Reef G.M. Co., Ltd.—Twenty-first Ordinary General Meeting, at 12.15 p.m.
May 27.—Ginsberg G.M. Co., Ltd.—Twenty-fourth Ordinary General Meeting, at 11.30 a.m.
May 27.—Glencairn Main Reef G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 11.45 a.m.
May 28.—Consolidated Langlaagte Mines, Ltd.—Sixteenth Ordinary General Meeting, at 10.40 a.m.
May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.—Ninth Ordinary General Meeting at 3.30 p.m.
May 28.—Langlaagte Estate and G.M. Co., Ltd.—Twenty-eighth Ordinary General Meeting, at 12 o'clock.
May 28.—Randfontein Estates G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 2.15 p.m.
May 28.—Van Ryn Deep, Ltd.—Fourteenth Ordinary General Meeting, at 3.10 p.m.
May 28.—Witwatersrand G.M. Co., Ltd.—Annual Ordinary General Meeting, at 11.30 a.m.
May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.
June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
June 19.—Durban Roodepoort Deep, Ltd., at 12 noon.
June 20.—City Deep, Ltd., at 12 noon.
June 20.—Robinson G.M. Co., Ltd.—Twenty-ninth Ordinary General Meeting, at 2.30 p.m.
June 21.—Village Deep, Ltd., at 2.30 p.m.
June 21.—Geldenhuys Deep.—Twenty-fourth Ordinary General Meeting, at 11 a.m.

Mafeking Gold Claims Case.

Mr. Justice Searle gave judgment in the Cape Supreme Court last week in the action by Arthur Dawson against Herminius Albertus Roussouw and Lucas Petrus Steenkamp, in which plaintiff claimed as against both defendants (a) a declaration that plaintiff was entitled to certain 25 claims; as against first defendant (b) an order calling upon him forthwith to take all necessary steps to peg and to procure in his own name the registration of 25 claims in block upon the gold reef, the claims to extend from the north-western portion of Gembokpan along the reef; (c) an order calling upon him forthwith upon registration in his favour to effect transfer of the 25 claims in favour of plaintiff in the office of the Registrar of Claims. There was an alternative prayer for £12,000 as damages, with costs against both defendants. The Court made the following order: (1) As against both defendants in terms of prayer (a) of plaintiff's declaration. (2) As against the first defendant in terms of prayers (b) and (c) on payment by plaintiff to first defendant of £22 9s. 7d.; but if the sum of £1,000 is paid as damages by defendant Roussouw, the judgment of the Court is to be taken as satisfied, provided that the plaintiff's costs of suit in convention and reconvention, including his costs of motion proceedings in which the interdict was granted, and including the application for the extension of the interdict, are also paid. The plaintiff's costs of suit in convention are to be paid in the first instance by defendant Roussouw, and failing payment by him, by defendant Steenkamp. Absolution from the instance on the claim in reconvention with costs to be paid by Roussouw. Plaintiff is declared a necessary witness.

REDUCED PROFITS FROM THE ROBINSON.

Review of the Declining Days of the Mine.

In his report on the operations of the Robinson G.M. Co., Ltd., for the year ended December 31st, 1918, the consulting engineer, Mr. Percy Cazalot, writes:—The following are the salient features of the results obtained in 1918, as compared with those for the previous two years: Tonnage mined, 1916 633,672, 1917 604,530, 1918 453,900; tons from surface dump, 1916 62,362, 1917 14,470, 1918 nil; per cent. sorted, 1916 1·3, 1917 nil, 1918 nil; tonnage milled, 1916 690,390, 1917 618,700, 1918 493,700; yield per ton milled (dwts.), 1916 5·888, 1917 5·458, 1918 5·176; yield per ton milled, 1916 24s. 6d., 1917 22s. 9d., 1918 21s. 7d.; cost per ton milled, 1916 13s. 10d., 1917 15s. 1d., 1918 19s.; total working profit, 1916 £367,152, 1917 £238,197, 1918 £63,785. The tonnage milled shows a considerable decline, the monthly average being only 41,200 tons, as compared with 51,500 in the previous year; tonnage was lost by delays to hoisting occasioned by the abnormal rains at the beginning of the year and owing to the severe incidence of the influenza epidemic in September and following months. Labour was very short throughout the year, and the disorganisation caused by the epidemic was so great that the ore milled in the last quarter only averaged 36,000 tons per month. The yield shows a decrease of 1s. 2d. per ton milled, while the costs have increased by 3s. 11d. per ton owing to the smaller tonnage milled and to increased charges for stores and white and coloured wages. With a continuance of the bad native labour supply and consequent high working costs, it has been necessary to decrease the quantity of ore coming from the poorer Main Reef, a large proportion of which has to be rated as unpayable at the present increased range of costs; should, however, labour conditions improve, much of this Main Reef will be available and could be worked with profit given any material increase in the scale of milling. An estimate has been made of the Leader and South Reef ore still remaining in the mine, and this amounts, on a conservative basis, to 322,000 tons; a decrease of 121,000 tons on the estimate made at the end of last year. This is a satisfactory showing in view of the fact that approximately 250,000 tons were mined from these reefs in the intervening period. The tonnage of Main Reef, which is of sufficiently high value to be payable at the present time, can be safely assumed to be adequate in amount to allow of its supplying the necessary "make-up" tonnage during the period the richer reefs are being exhausted. Owing to the continued shortage of labour during the year, it was decided to abandon working Main Reef in the No. 4 (West) shaft area, so as to admit of better concentration of effort and the utilization of the existing material (rails, trucks, timber, etc.) to greater advantage; resumption of work in this area must depend on a complete return to pre-war conditions, since adequate Main Reef, as "make-up" ore to be mined in conjunction with the remaining ore on the richer reefs, exists in the No. 2 shaft area. Any improvement in results during the current year is dependent on a very considerably increased supply

of native labour; it has been estimated that a minimum increase in the underground force of 600 is necessary to obtain a sufficient tonnage to allow of making the best use of the large area of Main Reef still remaining in the mine; the actual number of underground natives on the mine at the year end was only 1,949. During January and February of this year there has been an increase in the number of natives coming forward, but not as yet sufficient to warrant anticipation that any material increase in the profit can be expected. On December 4th Mr. Palmer Carter, who had been manager of the mine for a number of years, died suddenly of heart failure, and in him the company, staff and employees lost a good friend and ready helper. Mr. Thorlund, who held the position of surveyor under Mr. Carter, was appointed to act in his place pending a permanent appointment, which has been made since the end of the year. Mr. Thorlund carried through a difficult position with tact and ability.

Rezende Mines Dividend.

At the tenth annual meeting of the Rezende Company, to be held at Salisbury on the 8th day of May next, the board of directors will recommend the shareholders to declare a final dividend of 10 per cent. (2s. per share) in respect of the year 1918, payable to shareholders registered at the 30th April, 1919.

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THE WEEK IN THE SHAREMARKET.

A Small Stock Market—Further Slump in Springs—A Holiday Week.

On Saturday morning most of the business done was in small stocks, such as Knight Centrals, Coronation Freeholds, Bush Tins and Boksburgs, all at an advance. The better class stocks, with the exception of Modder Bs., were neglected at the call, no sales being booked in any of the Modder lot except Modder East, at a small advance.

Nothing was done, either, in Government Areas, Gedulds, Springs or Van Ryn Deeps. Crown Diamonds are evidently resting. At the opening on Monday the only sales recorded were Crown Diamonds at 22s. 9d. and New State Areas at 23s. 3d. The call was dull with little inclination to deal.

Crown Diamonds were in rather better demand, but the only stock in which interest was taken proved to be the lately resurrected Bush Tins, which advanced from 1s. 3d. to 1s. 9d. The leading securities were unchanged. The sale of 200 Springs brought these aforetime great favourites back to 51s. After the call Bush Tins had a further rise to 2s. 5d., but came back to 2s. 1d.; Crown Diamonds were better at 23s. 3d., and Government Areas at 92s. 6d. At the opening on Tuesday the small stocks, such as Bush Tins, Coronation Freeholds and S.A. Lands, received most attention. Springs came in for another setback with a commencing sale at 49s. 9d. and a final one at 49s. The whole market, with the exception of the Modder group, Geduld Props and Van Ryn Deeps, was lower and business limited. After the call Government Areas advanced to 92s. 6d. and Bush Tins fell to 1s. 6d.

The following deals in outside stocks took place during the past week:—Sales: Monteleos, 14s. 6d. to 13s. 6d.; Makganyenes, 61s. to 60s. 6d., closing sellers at 60s.; Sakalavas, 9s. to 10s. 6d.; Koodoos, 22s., closing 21s. sellers; Phoenix, 1s.; Henderson's Options, 11d. to 1s.; South Westerns, 70s. Buyers and Sellers—New Farms, 1s. 10d. to 2s.; Union Tins, 4s. 6d. buyers; Koodoo Vendors, 18s. to 20s. At the Call on Wednesday the chief feature of interest was a sale of 1,000 Springs at 49s., 90 days' buyer's options. The changes in quotations were: Sales—Bush Tins, 1s. 6d.; Crown Diamonds, 22s. 3d.; Government Areas, 91s. 3d. and 91s. 6d.; Knight Centrals, 8s. 1d.; Heriots, 10s.; Springs, 48s. and 47s. 9d., and sellers: Van Ryn Deeps, 68s. 9d.; Zaaipplaats, 11s. 6d. Buyers and Sellers—Apex, 7s. 6d. buyers; Hume Pipes, 32s. buyers; Modder B., £7 15s and £8; New Modders, £26 10s. sellers; Princess, 2s. 5d. and 2s. 6d.; South Van Ryns, 9s. and 9s. 9d.; Union Corporations, 15s. 6d. buyers; West Springs, 22s. 6d. and 23s.

	Fri., 11th.	Sat., 12th.	Mon., 14th.	Tues., 15th.	Wed., 16th.
African Farms . . .	13 3*	13 0*	13 0*	13 0*	13 0*
Anglo-Amer. Corp. .	26 0†	25 0†	26 0†	21 0†	25 0†
Apex Mines	—	7 3	—	7 4*	7 6*
Bantjes Cons. . . .	2 1*	2 0*	—	2 0*	2 2
Brakpan Mines . . .	62 3*	62 0*	62 0*	62 0*	62 6*
Breyten Colls. . . .	—	—	11 6*	—	—
Brick and Potter. .	—	6 0†	5 6†	1 6*	4 6
Bushveld Tins . . .	1 3	1 0	1 9	2 1	1 6
Cassel Coals	22 6*	22 6*	22 6*	22 6*	22 6*
Cinderella Cons. . .	1 0	3 9*	3 9*	3 9*	4 3†
City and Subs. . . .	5 9*	6 0	5 9*	6 0†	5 6*
City Deeps	52 0*	52 0*	52 0*	52 9†	51 6*
Clydesdale Colls. .	—	23 6*	—	23 6*	23 6*
Con. Investments . .	—	25 0*	—	24 0*	24 0*
Con. Langlaagtes . .	18 3*	17 6*	18 6*	19 0	20 0†
Con. Main Rrefs . .	10 6	10 3*	10 3*	10 1½	10 6†
Con. Mines Sel. . . .	22 6*	24 0†	22 6*	23 6*	23 0*
Coronation Colls. .	55 0*	53 9*	53 9*	52 6*	52 6*
Coronation Frees. .	1 5	—	1 4*	1 4*	1 3*
Crown Dias.	22 3	22 3	22 9	22 6	22 3
Daggafontein Mines	22 6	22 6	22 6	22 6*	22 6*
Durban Road. Dp. .	8 0†	8 3†	8 0†	—	—
East Rand Coals . .	2 3*	—	2 4*	2 3*	2 3*
East Rand Deeps . .	1 0	0 11*	0 11*	—	0 10*
E.R. Minings	—	17 0*	17 0*	—	—
East Rand Props. . .	5 9*	5 10*	5 6*	5 9*	5 9*
East Rand Debs. . .	£62*	—	—	£70†	—

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 11th.	Sat., 12th.	Mon., 14th.	Tues., 15th.	Wed., 16th.
Eastern Golds . . .	1 4	1 3*	1 3*	1 4	1 4*
Frank Smith Dias. .	3 5*	3 10*	3 10	3 10*	3 9*
Geduld Props. . . .	44 6*	45 0	44 6*	45 0	45 0
Ginsbergs	1 0	—	—	—	2 0†
Glencairns	—	1 6†	1 6†	1 0*	1 0*
Glencoe Colls. . . .	—	—	6 0*	—	6 0*
Glynn's Lyden. . . .	—	21 6	22 0†	—	—
Govt. Areas	91 6*	92 0	92 0*	91 0*	91 6
Jhb. Bd. of Ex. . . .	30 0*	—	30 0*	30 0*	30 0*
Klerksdorp Props. .	1 1*	1 1*	1 0*	1 1*	—
Knight Centrals . . .	8 2	7 4	7 10	7 11*	8 1
Knights Deeps	4 6*	—	—	—	6 6†
Lace Props.	20 3*	20 3*	20 3*	20 0*	—
Leeuwpoot Tins . . .	23 3*	23 3*	23 3*	23 0*	23 3*
Luipaardsvlei	—	—	2 0†	—	—
Lydenburg Farms . .	8 7*	8 9	8 8*	8 9	8 7*
Middelvlei Est. . . .	1 0	1 0	1 0	1 0*	1 0*
Modder B.'s	160 0*	157 6*	160 0*	160 0	155 0*
Modder Deeps	147 6*	147 6*	147 0*	150 0†	147 6*
Modder Easts	19 4*	19 1½	19 3	19 3*	19 6
Do. Options (3yrs.) .	3 4*	3 4*	3 7	3 3*	3 6†
Do. Options (4yrs.) .	1 9*	4 8*	1 9*	4 8*	5 0†
Hume Pipes	31 0*	32 0*	32 0*	31 6*	32 0*
Natal Navi. Colls. .	21 9*	22 0*	22 0*	22 0*	22 0*
National Banks . . .	£15†	£14½	£15†	—	£15†
New Boksburgs . . .	2 0*	1 3*	2 0	2 3†	1 11†
New Eland Dias. . .	24 0*	24 0*	28 0†	28 0†	25 0*
New Era Cons. . . .	10 0*	10 0*	10 1*	10 0*	10 0*
New Geduld Deeps .	6 0†	—	1 9*	4 11	4 9*
New Heriots	—	—	—	9 0*	10 0
New Kleinfonteins .	—	11 6*	11 3*	11 0*	11 0*
New Unifeds	3 6*	3 6*	—	—	3 6*
Nigels	6 6†	5 9*	5 6	—	6 0†
Nourse Mines	13 0*	13 0*	—	—	13 0*
Pretoria Cements . .	68 6	67 0*	67 0*	67 6*	67 6*
Princess Estates . .	2 6	2 6*	2 3*	2 0*	2 5*
Rand Colls.	—	3 0*	3 9*	4 0†	3 3*
Rand Mines	—	55 0†	—	—	—
Rand Nucleus	1 10*	1 9*	1 9	1 11†	1 11†
Rand Select. Corp. .	78 0†	76 0*	76 0*	76 0*	78 0†
Randfontein Deeps .	4 3*	4 3*	4 6*	4 6*	4 6*
Randfontein Est. . .	15 0*	15 3*	15 0*	15 0*	—
Roberts Victors . . .	10 6*	15 0†	12 6*	12 6*	12 6*
Rooibergs	4 6*	6 4½	6 4½	6 1½	6 0*
Rooipoort U.	—	—	3 0†	—	—
Ryan Nigels	3 3*	3 3*	3 3*	3 3*	3 3*
Shebas	1 0*	—	1 9*	1 9*	1 9*
Simmer and Jacks . .	4 6†	4 6†	—	3 0†	2 6†
Simmer Deeps	1 6*	1 9*	1 6*	1 6*	1 6*
S.A. Lands	6 5*	6 4	6 4*	6 4*	6 4*
Springs Mines	51 3*	51 0*	51 0	48 3	47 9
Sub Nigels	21 9*	21 6*	21 9*	21 3*	21 3*
Swaziland Tins . . .	—	15 0*	—	15 0*	15 0*
Transvaal Lands . .	—	22 0	—	—	—
Van Ryn Deeps	68 0*	68 0*	68 0*	68 0*	68 9
Village Deeps	—	16 0*	—	17 0†	16 0*
Western Rand Est. .	1 6*	—	1 7*	—	1 7*
Witwatersrands . . .	17 6*	17 6*	17 6*	17 6*	—
Wit. Deeps	16 0	16 3*	16 0*	16 0*	—
Wit. Townships . . .	—	—	—	24 0*	—
Wolluters	—	2 9†	2 6	—	2 7*
Zaaipplaats Tins . .	12 3†	12 3†	11 6	11 6*	11 0
New Union 5 p.c. . .	£100½	£100/6*	£100½	—	£100½*
New States	23 0*	23 3	23 3	23 0*	23 0*
S. Van Ryns	9 9	9 3*	9 9	9 3	9 0*
S.A. Alkali	22 6*	29 0†	29 0†	28 0*	29 0†
West Springs	23 3	22 9	23 6	23 0	22 6*
West Options	8 3*	—	8 3*	—	—
Twefontein Colls. .	—	—	22 9*	22 6*	22 6*

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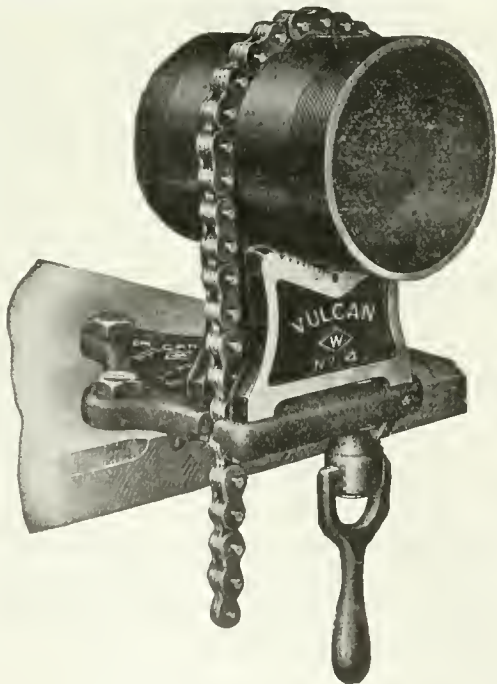
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ENGINEERING SECTION.

THE ADVANTAGES OF CIRCULAR SHAFTS.—II.

Questions of Hoisting and Air Space—Shaft Equipment—Rope Guides.

[By H. STUART MARTIN.]

THE following is the continuation of the paper by Mr. H. Stuart Martin on circular vs. rectangular shafts, read recently before the South African Institution of Engineers. The first part of the paper appeared in our issue of January 18:—The following table gives the sizes of typical rectangular shafts sunk or in course of sinking on the Rand:

	No. of Compartments.	Actual Excavation.		Area inside of wall plates.	
		Feet.	Square Feet.	Feet.	Square Feet.
Henry Nourse	3	8 × 15	120	6 × 13	78
Jumpers Deep	4	8.5 × 23.5	199.75	6 × 31	126
South Nourse	5	8.5 × 31.5	267.75	6 × 29	174
Crown No. 5	7	9 × 45	405	8' 6" × 42' 6"	276.25
Randfontein	4	13 × 28.5	370.5	10' 7" × 23' 3"	277.20

From the above it is seen that the air space, neglecting area taken up by internal timber, such as dividers, etc., is greater in the Randfontein four-compartment shaft than in the Crown Mines No. 5 seven-compartment shaft, despite a smaller area excavated, and is, of course, considerably greater if the internal timbering is taken into account. The following table gives the area occupied by circular shafts of various dimensions:—

DIAMETERS.		AREAS.	
Actual Excavation.	In the clear, allowing 1ft. 6in. for walling.	Actual Excavation	Inside walling.
		Sq. ft.	Sq. ft.
11ft. 6in.	10ft.	103.87	78.55
13ft. 6in.	12ft.	143.14	113.10
15ft. 6in.	14ft.	188.69	153.94
17ft. 6in.	16ft.	240.53	201.06
19ft. 6in.	18ft.	298.65	254.47
20ft. 6in.	19ft.	330.06	283.53
21ft. 6in.	20ft.	363.05	314.16
22ft. 6in.	21ft.	397.61	346.36
23ft. 6in.	22ft.	433.74	380.13

From the above figures it appears that the rectangular shaft offers the greatest hoisting space for a given area excavated, more particularly the Randfontein type. The point of interest is that the Randfontein shaft, compared with the old type of rectangular shaft, offers for a given area excavated greater air space and larger hoisting area, and it also requires less timber to equip it. While the circular shaft fails in hoisting area, which to a great extent can be met by the employment of large units.

The actual superficial area excavated when sinking a circular shaft having a diameter of 21 ft. inside of walling is the same as that required to sink the Randfontein rectangular shafts now being sunk. But in the circular shaft 86 per cent. of the superficial area excavated is available air space, while in the Randfontein rectangular shaft only 75 per cent. is available. In the case of No. 5 Crown Mines shaft, only 68.2 per cent. of the actual area excavated is available, and a great deal less when taking into account the area occupied by the extensive internal timbering. A comparison of the above-mentioned three shafts, from the point of view of eventual air space for area excavated, shows that the circular shaft is preferable by a very large margin, and that the old elongated rectangular type is distinctly unsuitable. As regards the superficial area available for hoisting (accepting usual practice) in these three types of shafts, the position is approximately as follows:—

Crown No. 5.. 6.1 × 4.4 × 6 + 6.1 × 3 = 179.3 sq.ft.
Randfontein ... 10.183 × 5.333 × 3 + 6 × 5.333 = 194.9 sq.ft.
Circular (21 ft. dia.) ... 4 × 6 × 6.5 = 156.0 sq.ft.

From the above figures it appears that the rectangular shaft offers the greatest hoisting space for a given area excavated, more particularly the Randfontein type. The point of interest is that the Randfontein shaft, compared with the old type of rectangular shaft, offers for a given area excavated greater air space and larger hoisting area, and it also requires less timber to equip it. While the circular shafts fails in hoisting area, which to a great extent can be met by the employment of large units and faster hoisting, it surpasses all types of rectangular shaft in other respects.

THE EFFECT OF AREA AND FRICTION RESISTANCE: CIRCULAR V. RECTANGULAR SHAFTS.

Assume a circular shaft 20 ft. in diameter as lined out and a rectangular shaft of equal depth 31.4 feet by 10 feet between lagging, thus giving equal areas of, say, 314 square feet.

Case 1.—According to the well-known formula of Atkinson

$a = p \times k \times s \times v^2$,
where a = area of opening,
p = pressure required to overcome friction,
k = coefficient of friction,
s = area of rubbing surface,
v = velocity of air.

Other factors being equal, the pressure required to pass an equal quantity of air is proportional to the rubbing surface, i.e., the perimeter of the shafts.

(a) Therefore the relative pressures or power required to deliver equal quantities of air for the two shafts would be in the proportion

Rectangular Shaft ... 82.8 1.316
Circular Shaft ... 62.8 1.000

i.e., the rectangular shaft would require 31½ per cent. more pressure or power to deliver the same quantity of air,

(b) At the same pressure the relative quantity of air delivered varies inversely as the square root of the rubbing surface

Capacity Circular Shaft ... $\sqrt{82.8}$
Capacity Rectangular Shaft ... $\sqrt{62.8} = 1.147$

i.e., the circular shaft has, say, 15 per cent. more capacity than the rectangular.

Case 2.—A rectangular shaft as usually constructed, however, has its wall plates projecting into the shaft area, assume, therefore, wall plates projecting 9 in. all round into the shaft—the area of clear space left, therefore, would be 254 square feet and the periphery, say, 76.8 linear feet.

(a) The relative pressure or power required to deliver equal quantities of air through the rectangular shaft varies directly as the peripheries, and inversely as the areas and

directly as the square of the velocities. The pressure would, therefore, vary directly as the peripheries and inversely as the cube of the areas. The relative pressures and power would, therefore, be

$$\begin{array}{rcl} \text{Rectangular Shaft} & \dots & 76.8 \quad (314)^3 \\ \text{Circular Shaft} & \dots & 62.8 \quad (254) \\ & & \frac{2.31}{1.00} \\ & & = 1.22 \times 1.89 = \end{array}$$

i.e., to deliver the same quantity of air the pressure or power required would have to be $2\frac{1}{3}$ times as great in the rectangular as in the circular shaft.

(b) If the pressure for both shafts be the same, then the quantity of air delivered will vary inversely as the square root of the peripheries and directly as the square root of the cubes of the areas. The relative quantities of air delivered by the rectangular and circular shafts will, therefore, be

$$\begin{array}{rcl} \text{Rectangular Shaft} & \dots & = \frac{62.8}{76.8} \sqrt{\frac{(254)^3}{(314)^3}} \\ \text{Circular Shaft} & \dots & \\ & & \frac{.66}{1.00} \\ & & = 0.905 \times .727 = \end{array}$$

i.e., the rectangular shaft would deliver only $\frac{2}{3}$ of that of the circular, or, conversely, the circular shaft would deliver 50 per cent. more air than the rectangular. The difference might be even greater, as no account has been taken of the effect of the necessary dividers required in the rectangular shaft, which decrease the effective area and add to the resistance. The effect of the wall plates and dividers is to induce eddy currents, which are the chief source of loss of energy in the flow of fluids.

NEGLECTING AIR SPACE.

Neglecting the air space or the importance of the shaft for ventilating purposes, then the capacity of the shaft for maximum hoisting space can be considered, when it must be admitted that the rectangular or square shaft provides more space for hoisting compartments. However, in rectangular shafts, fixed guides or runners must be employed and the speed of hoisting limited.

SHAFT EQUIPMENT.

In my opinion, down to a depth of 2,500 feet, or even 3,000 feet, with ample clearance, there is no form of guides to compare with rope guides for smooth, safe, and fast running. A rectangular shaft is not suitable for rope guides. One of the essentials for perfect guiding of a cage or any form of receptacle running in a shaft is to guide it by its extremities to avoid maximum oscillation. The point at which the body is attached to a guide should be as distant as possible within practicable limits, calling for large compartments, which is a feature of circular shaft equipment as compared with rectangular shaft. The usual practice of guiding a cage or skip in rectangular shafts allows of the maximum oscillation and rougher riding, resulting in high maintenance cost, limited speed of winding in conjunction with safety, and the necessity of additional hoists to meet the output. There is no comparison in the life and cost of steel or rigid guides with rope guides; provided rope guides are kept constantly well greased, they have almost an unlimited life, particularly if the winding rope is of a non-twistable type and the rope guides are specially built. To cite one case only, that I know of personally: At a certain colliery the same set of rope guides are still working after 20 years' use, showing very little wear; and this particular colliery has been hauling from a pair of shafts up to 3 000 tons per shift throughout the whole of this period, the only cost being that of changing the brass bush-bearings, greasing of ropes and cleaning of garlands. The examination of ropes takes half-an-hour each 24 hours, to comply with

the mining regulations. Compare this with rail guides, steel slotted guides or wood runners over a period of 20 years. One runs into large figures in the saving on maintenance in favour of circular shafts when comparing these shafts equipped with rope guides as against any other system.

NEW MODDERFONTEIN CIRCULAR SHAFT EQUIPMENT.

A plan and section showing the equipment of the New Modderfontein circular shaft, 18 ft. diameter, and position of guides and cages in the shaft will be of interest, as the only shaft equipped in this manner in the country. Four guides $1\frac{1}{4}$ in. diameter are attached to the four corners of the cages. Rubbing boards are fixed on the cages. Two-inch diameter division ropes are hung between the cages non-attached, showing a clearance of $3\frac{3}{4}$ in. between the rubbing board and the guide. The two division ropes are hung from a girder across collar of shaft, the remaining eight guides being hung from the headgear. The length of the cage is 12 ft. 1 in., the minimum clearance is 1 ft. 6 in. from the cage corners, and the maximum speed of travel in shaft of cages is 4,050 feet per minute. Byatts are fixed in the shaft parallel to the cages on the outer side, which carry on the one side a 16 in. air main and room for two 16 in. air mains, and on the other side water columns and cables. The cages are double-decked; the lower deck only is used for hoisting the rock to the surface in a six-ton truck, both decks being used for men—80 men and boys being hoisted at one time.

DISADVANTAGES OF ROPE GUIDE EQUIPMENT.

The disadvantages of rope guide equipment are probably: (1) The limit of depth at which rope guides can be used with safety. I do not know what this depth is; it will depend in a great measure on the clearance, speed of hoisting, and the steadiness of the wind. With an electrical equipment, I do not think there would be any difficulty in equipping a shaft with rope guides to a depth of 3,000 feet, and winding at maximum speed of 4,000 feet per minute. Great care must be given to freedom of vibration. In shafts upwards of 3,000 feet it would probably be wise to avoid the use of rope guides; in such cases rail guides are generally adopted, and work exceedingly well. (2) The necessity for very powerful and heavy headgear—the extra weight of guides and weights being carried by the headgear. These disadvantages, however, do not prevent the use of circular shafts for greater depths, provided buntons are installed to carry the rigid guides. By the use of rigid guides increased space becomes available for hoisting compartments, as there is not the same necessity for clearance. I would advise the sinking of a rectangular shaft when the number of compartments required exceeds four. The largest diameter circular shaft to my knowledge is 25 feet. The main advantages of circular over rectangular shafts, exceeding depths at which rope guides are used, are chiefly in the first cost of sinking, and afterwards maintenance, strength of shaft, and ventilation.

SPEED OF SINKING.

Under favourable conditions, sinking in hard quartz rocks, with water not exceeding 2,000 gallons per hour, 7 feet to 9 feet a day can be sunk in three shifts of eight hours. This rate of sinking does not include walling or shaft lining. Fifty to sixty feet of walling per day of three shifts is good work. Walling and sinking do not proceed at the same time. The No. 14 shaft, Crown Mines, 20 feet diameter (inside walling), was sunk and walled to a depth of 3,200 feet in 21 months, including the cutting of two lodge rooms and sumps—capacity to hold 50,000 and 75,000 cubic feet. The shaft bottom arches, 25×23 , were also cut and walled, and included in the work at a final cost of £23 per foot sunk. The cost of walling varies from £4 to £6 per foot, depending on the thickness of walling and the nature of the walling. The higher costs will cover ordinary watertight walling. The walling consists of concrete blocks made on the spot, 6 in. $\times$ 9 in. $\times$ 12 in., shaped to the shaft.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Business Quiet on the Commercial Exchange—Agricultural Machinery at the Show—Hume Pipes.

AGRICULTURAL SHOW.

At a preliminary visit to the Show Ground on Tuesday it was noticed that the cattle sections have filled marvellously well, so much so that additional accommodation had to be provided, which had been arranged for but not carried out in consequence of the strike. The question of cattle has been referred to because it means plenty of meat for the gold fields and some to export as well.

HUME PIPES.

A special feature is the medium-sized model plant for the purpose of making examples of this new and important industry. There is a small covered shed for the operators; the machinery will be driven by a small engine. There are various unique contrivances to manufacture the pipes from 4 in. to 12 in. The moulds are simplicity itself. A wire work contrivance is fitted within the moulds close up to the cover, thus forming the basis for the reinforced concrete when the whole thing is revolved at a good many thousand revolutions per minute. The finished pipes are from 4 in. to 2 ft. 6 in., and from a casual inspection they are a well-finished and businesslike piece of manufacture. The smallest pipe is a 4 in. hydraulic one and the largest to be made at the Show Ground is to be 12 in. It is all so simple and it seems assured that a great future is in front of this new industry in South Africa. One great advantage is that we have the raw material in the shape of cement already being manufactured in this country.

AGRICULTURAL IMPLEMENTS AND MACHINERY.

After nearly five years of war it is surprising to have such a Show. However, it is only fair to remark that it is much the same as last year as regards machinery, as the importations have been very small compared with our great requirements. It was just a little disappointing that more local work was not in evidence. One expected to find a few of a cheaper, or it might be said, native ploughs, but nothing of the kind was noticed. Therefore it must be taken for granted that the Johannesburg industries so far as agriculture is concerned, are in their infancy—the only thing available is the making and sharpening of plough shares, coulters and maybe other wearing parts. It was rather surprising to find so many English ploughs, both the ordinary and discs. The American came next, followed closely by the Canadian. The next thing of importance was corn and seed drills of various kinds. There were several harvesters, potato planters and potato diggers; these latter chiefly came from America.

POWER MACHINERY.

The outstanding features are the agricultural motor tractors operated for ploughing by the British Government under the Food Department. The lecture by Mr. G. Hildrick Smith must of necessity be very interesting. Perhaps more is expected from this motor tractor ploughing than from any one factor for many years past in the way of progressive agriculture. Naturally the soil will have to be cleared of rocks, but as we have been in ploughing existence so long this is somewhat a matter of detail. The chief point is to catch the rainy season and so rush the ploughing at two shifts of 8 hours a day each, so that what would

take a month or more to do by oxen may, it is hoped, be done in even less than a week by these new ploughs. It is satisfactory to note that ploughing demonstrations will take place every morning and afternoon in the Show Ground.

Portable engines are not too plentiful, and it was rather peculiar to notice a second-hand Fowlers' engine being painted and furbished up to make it look like new. This is mentioned to illustrate the fact that new engines are scarce, as in the first place there was no surplus manufacture in England during the latter part of the war period and they are not easy to ship under normal conditions let alone the shipping difficulties during the war.

MINING AND OTHER INDUSTRIES.

Notwithstanding a three months' strike of the moulders, it is marvellous what was accomplished during the latter part of the war period. All manner of spares and substitutes for batteries and other machinery connected with the mines shown in the industrial hall, etc., makes one lost in amazement as to what can be done when we are forced to it. There are also an ever-growing number of new industries displayed from year to year, and this one in particular, because of the pressure brought to bear through the stress and circumstances of the war. This brought about a demand for local production, and out of nothing, as it were, much ingenuity has been displayed in finding substitutes for the lack of oversea importations, and South Africa has very much risen to the occasion and has surmounted difficulties that must have at one time seemed almost out of reach of local enterprise.

WINDMILLS.

There was a very fine display of windmills from Delagoa Bay, Port Elizabeth, as well as a few from America and other places. Some had various accessories in the shape of small motors to assist and even do the pumping when the wind was not strong enough. It has been well said that the windmills and different kinds of pumps are an interesting feature and study in themselves.

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TREND OF BUSINESS.

Trade is bad and money stringent, chiefly on account of the strike atmosphere. However, with this exception of the building employees, other trade unionists seem to fix up their differences by round table conferences. It is surprising what a volatile community our Johannesburg is, because when it became known that the result of the strikers' ballot on Monday was in favour of accepting 3s. 4d. instead of 3s. 3½d. per hour, a better feeling at once prevailed in business circles. Therefore on Tuesday morning there were double the usual enquiries from one firm to another, by 'phone, by brokers and personal application generally. Very little actual business was done, but prices hardened to the extent of the sellers' quotation of yesterday being the ruling prices of to-day. Our merchants are standing up wonderfully well against the dull times, but the secret is that they are managing upon the harvest of the last few years.

TIMBER AND BUILDING MATERIAL.

In the early part of the week there was quite a better feeling when it seemed almost a certainty that the builders' strike would be settled. Naturally the supposition is that after nearly three months of idleness there will be a great demand for building material. There is no doubt that the strike has had a great deal to do with the price of deals having dropped to 1s. 6d. in the ordinary way and even to 1s. 4½d. per ft. in the competitive orders on the Exchange, which latter is almost a shilling below the top price touched during the war period. The recognised standard quotations for deals are 1s. 6d. to 1s. 6½d.; floorings, 8½d.; and ceilings, 6d. The Baltic cable news is that timber is slightly higher f.o.b. Sweden, but this is likely to be more than compensated for by lower freights after peace is signed, but undoubtedly there are fears throughout commercial circles that it is doubtful when peace really will be signed considering the apparent troubles in Berlin, Austria, Hungary, etc. The builders' hardware has at last become exceptionally dull, and if it were not for the country

orders it would be at a veritable standstill. So far the brickyards have not suffered, excepting in the stringency of financial matters, as the kilns have been kept going and stocks are therefore in superabundance simply because the builders' strike has prevented any demands. The prices are exactly the same, and it remains to be seen how they will go when the bricklayers start once again.

ELECTRICAL GOODS.

There is no change to report during the past week, nor any alteration in prices. The demand in town, owing to the strike, has been practically nil, but country business has been fairly good, and even along the reef orders have been executed. Merchants are unanimous that as soon as the strike troubles are satisfactorily settled a general spurt will occur in this industry. A consignment of British wiring and accessories arrived during the week. The wholesale prices are 3-22, 27s. 6d.; 3-20, 40s.; 7-22, 50s.; and 7-20, 90s.

COMMERCIAL EXCHANGE.

On account of the Easter holidays the Exchange closes from Thursday afternoon to Tuesday morning. Business is very quiet indeed, almost at a standstill as regards the mines, which are quite in a waiting mood. This is not surprising considering the strike ballot being taken throughout the mines, and now the overshadowing peace negotiations. The real business on the Exchange is in connection with outside propositions, especially in connection with the Transvaal and Natal coalfields. A decent lot of regular orders come from there as well as from Rhodesia and right up to the Belgian Congo, also in a lesser degree from the Northern Transvaal, including the tin and copper fields. Imported round and flat bar iron in the smaller sizes is 50s. per 100 lbs. Galvanised piping is sluggish at 5½d. for half-inch and 7d. per foot for three-quarters. White lead is steady up, as 83s. per 100 lbs. was paid during the week for the best quality. No. 2 round nose shovels are 72s. 6d. and No. 4 square 85s. per dozen. Tubular wheelbarrows are 45s. each, as compared with 60s. in the highest war period. Wire nails are 65s., 1 in.; 55s., 2 in.; 50s., 3 and 4 in.; 45s., 5 and 6 in., per 100 lbs. Carbide remains at 75s.

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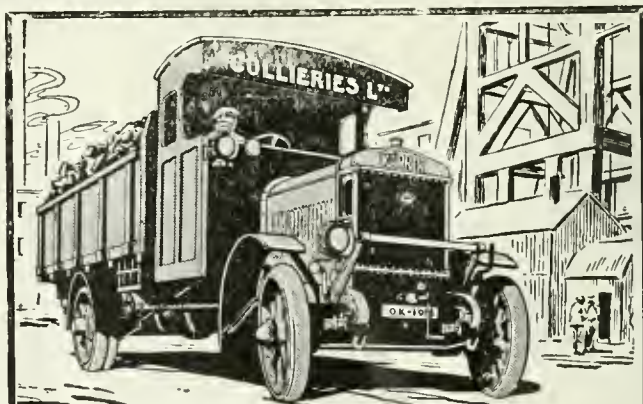
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The Week's Meetings.

CROWN DIAMONDS.

The annual meeting of shareholders of the Crown Diamond Mining and Exploration Co., Ltd., was held Mar. 12 at the offices of Messrs. Lewis and Marks, Mr. J. Emrys Evans, C.M.G., presiding.

The Chairman, in moving the adoption of the report and accounts, said: When I addressed you in June last year I referred to the disclosure by boring in your mine of good-looking blueground, the extent of which it was decided to determine. Shortly after the meeting this work was taken in hand; and, as you will have gathered from the report of the directors, a shaft has been carried down to a depth of 300 feet from the 140ft. level, and from this point drives are being cut in four directions and are still proceeding with highly satisfactory results. The blue ground encountered is pronounced by all who have seen it to be of very good appearance; and the great point for congratulation is that it is almost entirely free from foreign matter. Formerly our chief difficulty was that the ground we had to treat was so dirty, and an undue proportion of loads of hardibank, rock, floating reef, etc., had to be hauled as compared with the quantity of ground which was clean enough to be treated—and this despite the fact that only a small selected portion of the pipe was at the end of our previous operations being worked. The ground now being proved seems to hold out every indication that we have now got beneath this dirty ground, since we are proving clean, good-looking blue in all directions, despite the fact that so far our drives have not reached those portions of the pipe which, when we were last working it, was alone found profitable to mine.

The quantity of ground extracted during the new development work and floored awaiting treatment now totals about 2,000 loads. Progress in driv-

ing has been rather slower than was anticipated owing to ventilation difficulties. This is the reason that a greater number of loads has not been obtained to date. These ventilation difficulties have now been overcome, so that faster progress may be expected. The machinery has been thoroughly overhauled and is ready to start work immediately; and a test washing by direct treatment and on a representative scale will be undertaken very shortly under the personal supervision of Mr. E. Parsley, who has had very extensive experience in diamond mining. This test washing should give us a thoroughly representative indication of the value of the blue ground at this level. Reference to the directors' report for the year 1914 will show that from January to May of that year (washing operations having ceased at the end of the latter month) the yield was nearly 10 carats per 100 loads. That yield was obtained from ground much mixed with hardibank, etc.; and, therefore, when we now come to work clean blue ground there is every justification for hoping that we shall at least revert to the yield which was obtained when clean blue ground was being treated in the early days of this enterprise, which, I am informed, was over 16 carats per 100 loads—while it is no exaggeration to state that the price of diamonds is now nearly double that obtainable in 1914.

In addition to the advantages derived from a much greater proportion of clean ground for treatment and the large increase in the value of our product, we also look for an appreciable reduction in working costs. Formerly all our coal, stores etc., had to be transported by wagon from Kroonstad, a distance of nearly 20 miles. Since then a new railway has been constructed, with a station only three miles distant from our property. The importance of this is self-evident. It is only necessary to quote one item to demonstrate this. The transport

of coal cost us 8s. 6d. per ton, the total cost, delivered at the mine, in those days being no less than 21s. per ton. Over and above that, coal arrived at the mine largely pulverised and probably reduced in weight owing to jolting and the impossibility of adequate supervision all along the route. Spread over a long period, and with corresponding loss in connection with practically all our stores, you will appreciate that the resultant total loss would be considerable. Having thus dealt briefly with the generally hopeful outlook, I beg leave to draw your attention to the balance sheet. This is quite clear and calls for no comment, except in reference to the item "Loans," which stands at just over £150,000. This includes advances made to your company to enable it to continue operations when we were last working, and also covers the cost of caretaking, licences, etc., from the time the mine was closed down, and the cost of the prosecution of the recent development operations which are resulting so hopefully. But for this support afforded by Messrs. Lewis and Marks, there is every probability that the company would have been liquidated long ere this. Messrs. Lewis and Marks have now come forward with a scheme for further assisting the company, which will be presented to you on the 26th inst. This scheme, while practically clearing the company of its burden of debt by the issue of shares at par and so placing it in a sound position, will provide a sufficiency of cash for restarting washing. I am sure I am voicing your sentiments when I express the hope that Messrs. Lewis and Marks may be amply rewarded for the substantial manner in which they have shown their confidence in the future of the company.

The motion was carried, and the retiring directors, Messrs. J. Emrys Evans and William Ross, were re-elected. Messrs. Aiken and Carter were reappointed auditors.

New Patents.

131. The British Westinghouse Electric and Manufacturing Company, Ltd.—Improvements in blades for fluid pressure turbines.
133. Lucien Linden.—Process for the treatment of water from any source to effect its purification.
134. George Constantines Co.—Improved means for lubricating internal combustion engines.
135. Jens Jakob Lassen and John Lewis Gilberts.—Improvements in or relating to instruments for indicating or recording the flow of liquids.
136. Olindo Valeri.—Improvements in and relating to anchorages for railway and like tracks.
138. Carl Stuart Cannon, David Ritchie McLachlan and Hercules James du Preez.—A new and improved jockey for trucks in use in mechanical haulage.
139. David Miller Lewis.—Improvements in locomotive draft appliances.

140. Harry August Stockman and Alexander Proudfoot.—Improvements in drag scrapers, scoops and the like for excavating and similar purposes.
141. Ernest Alfred Henry Weaver.—Improvements in candle holders.
142. Armour Hall.—Improvements in rock drill cradles or mountings.
143. Emile Augustin Barbet.—An improved process for removing the tar from pyroligneous liquids.
144. Eugene Borkum.—A moulding device and former for concrete kerb and channelling.
145. Walter Ernest Thomas Bennett.—Improvements to adjustable wheels.
146. Margaretha Lesser.—An improved concentrator.
147. Frederick John Gustav Haaff.—Improvements in separating diamonds from their admixtures.
150. Howard Lane.—Improvements in apparatus for hydrogenising oils and fats.

The Capetown Tramways invite tenders for the supply of approximately 14,000 tons of round steam coal, to be delivered during the year ended 30th June, 1920.

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Agencies of the Central News Agency, Ltd., at all
News Agents and Railway Bookstalls throughout South
Africa, and at the London Agency as above.

NOTICE.—The postage of this issue of the *S.A. Mining
and Engineering Journal* is: South Africa, 1d. All other
parts, 1½d.

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Notes and News

Vereeniging Estates.

The coal pits of this company are now effecting sales of
about 50,000 tons per month.

* * * *

Prieska Nitrates.

Officials of the Government Department of Mines are
now conducting an investigation into the Prieska nitrate
deposits.

* * * *

South-West Diamonds.

We understand that important developments are pending
in connection with the diamond-bearing areas on the main-
land of the South-West African Protectorate recently
acquired by the company, to which reference was made
in our last issue.

* * * *

Wankie Company's Coal and Coke Sales.

The operations of the Wankie Colliery Company in
Northern Matabeleland have recently been hampered by the
disorganisation of labour consequent on the influenza
epidemic. The company continues, however, to produce and
sell large quantities of coal and coke. The latest monthly
return available exhibits coal sales amounting to 17,183 tons
and coke sales 5,473 tons.

* * * *

National Bank Profits.

At the annual meeting of the National Bank of South
Africa, to be held at Pretoria on June 25, the directors will
recommend a dividend at the rate of 6 per cent., plus 1 per
cent. bonus. The net profits for 1918-19 are £473,000. It
is intended to put £200,000 to the reserve fund, making it
£1,050,000, also £50,000 to the pension fund, leaving about
£23,000 forward.

* * * *

Rand Selections.

The following notice has been issued to shareholders:—
Exchange of share certificates: Owing to the name of the
company having been changed from Transvaal Coal Trust
Company, Ltd., to Rand Selection Corporation, Ltd., and
to the purchase from the Custodian of Enemy Property of
the enemies' shares vested in him, shareholders in posses-
sion of old certificates issued under the name of Transvaal
Coal Trust Company, Ltd., are requested to surrender them
as early as possible to be exchanged for new certificates
under the name of the Rand Selection Corporation, Ltd.

* * * *

C. M. & M. Society.

The next ordinary general meeting of the Chemical,
Metallurgical and Mining Society of South Africa will be
held in the Lecture Theatre, South African School of Mines
and Technology, Johannesburg, on Saturday, the 26th inst.,
at 7.45 p.m. General business: "The Handling of Amal-
gam from Steamed Plates," Paper for reading: "Agricultural
Motor Tractors," by Mr. G. Hildick-Smith (past
president), lately of the Food Production Department.
Reply to discussion: "Notes on the Removal of a Vertical
Shaft Pillar," by Mr. J. Chilton (member of Council). Final
discussion: "Notes on the Footwall Beds of the Far East
Rand Reef," by Mr. L. W. Maer (associate). Continued
discussion: (1) "The Determination of Available CaO in
the Different Classes of Lime supplied to Rand Reduction
Works," by Mr. C. A. Meiklejohn (member); (2) "The
Application of the Theory of Probability in the Determina-
tion of Ore Reserves," by Mr. G. A. Watermeyer (member
of Council); (3) "Ancient Tin Mines of the Transvaal," by
Mr. Max Baumann (member); (4) "Chemical Engineering,"
by Prof. J. A. Wilkinson (past president); (5) "Notes on
Economics in Hand Drill Steel," by Mr. H. A. Read
(member). Awaiting reply: "The Effects of Dust Inhalation,"
by Dr. J. S. Haldane, F.R.S. (hon. member).

Position of the Cinderella Mine.

The Boksburg Town Council has issued, for general information, the copy of a letter addressed by Sir George Albu to Dr. J. C. MacNeillie, M.L.A. It reads as follows:

"The following paragraph appeared in this morning's *Bond Daily Mail* as having been telegraphed from Capetown: 'In the Assembly to-day Dr. MacNeillie asked whether the Minister would reconsider the question of using his right to cause the Cinderella Deep to resume working in view of the fact that it was largely controlled by German money.' I do not know on what basis you considered yourself justified in making the statement attributed to you in the paper, but if the account given by the *Mail* is substantially correct, then I must say I think it is a great pity that a member of Parliament should take so little, or no, trouble to ascertain the correctness or otherwise of an assertion before making it in such a public manner, especially in view of the fact that in this instance the member (being yourself) represents the constituency in which the Cinderella Mine is situated. So far from the company being largely controlled by German money, I can inform you—as I should have been quite ready to do previously had you taken the trouble to ask me—that the whole of the enemy holdings in this company, whether in enemy names or in the names of English shareholders but nevertheless the property of enemies, represents under 9 per cent. of the capital in the case of the share issue and under 1 per cent. in the instance of the debenture issue. In the circumstances I trust that you will take some early opportunity of correcting your statement in the House yesterday."

* * * *

Salphos Fertiliser.

Last Saturday morning the new Salphos fertiliser factory on Ferreira Mine was started up by the Administrator of the Province, Mr. A. G. Robertson. In this factory, by a process invented by a young Dutch chemist (Mr. Tromp), the Saldanha Bay phosphate deposits will be turned into a fertiliser. The initial troubles which had been overcome and the prospects for the future were dealt with by the chairman of the company (Mr. Izod), who gave details of the finding of the deposits and the work up to date. They had, he said, kept in touch with the Agricultural Department and the Government since they first started, and he would like to take this opportunity of thanking the Minister of Agriculture and his staff for the assistance they had been at all times. They could with the existing plant turn out 2,500 to 3,000 tons per month of finished product with ease, and with slight modification could increase to meet almost all demands up to 50,000 tons per annum. The Administrator said he was very pleased to have the opportunity of starting another South African industry. The Mayor expressed the thanks of the company to the Administrator, and Mr. J. B. Taylor addressed the gathering on the association of this site with the early days.

* * * *

New Albion Transvaal Gold Mines.

According to the annual report of the New Albion Co., the option to purchase the freehold farm Valsfontein, now extended to March, 1921, has been maintained. The directors have acquired the freehold of the eastern portion of Eendracht. According to advice received February 25 last, the borehole had reached a depth of more than 2,400 ft., the indications being that the drill at that point was not far from the Van Ryn Reef, which it is anticipated will be struck at between 3,000 and 3,500 ft. Immediately adjoining is the northern portion of Klippoortje, by which the latter property, in conjunction with the adjoining farm Maraisdrift, will be developed, has been announced. The area of the company's portion of Eendracht is about 2,700 acres, and the minepacht, or exclusive mining right accruing, will equal 310 claims, which, with discovery rights, may be extended to 500 claims. In November last the company acquired from Dr. Sauer a one-half interest in an agreement between him and Boschhoek Proprietary, for boring on the farm Boschhoek, the entire cost of boring being borne by Dr. Sauer. The agreement with Boschhoek provides for the flotation of a mining company with a capital of not less than £600,000.

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British Overseas Bank.

Negotiations which have been going on in England for some time in regard to the formation of a new bank dealing with foreign trade and to develop closer working arrangements between its constituent banks are now well advanced.

The new bank will be entitled the British Overseas Bank, Ltd., and will, subject to Treasury sanction, start business within the next few months. The capital, which will be substantial, will be divided into two classes. One class will be reserved entirely for banking institutions; the other class will be issued to the general public, and will rank preferentially. The names of the banks appearing as promoters in the memorandum and articles of association are Anglo-South American Bank; Glyn, Mills, Currie & Co.; Northern Banking Co.; Union Bank of Scotland; and Williams Deacon's Bank.

* * * *

Shamva.

Appended to the December quarterly report of the Shamva Mines, Ltd. (which document discloses a slight gain in ore reserves during the period), is an important cable which has caused a sharp rally in the company's shares. It appears from the message that a discovery of payable ore has just been made on Cymrie Hill—the body at present being worked is in Lone Star Hill—and that so far as prospected the new ore body is 30 ft. wide and assays 1.3 dwts. gold per ton. It is officially suggested that the discovery may prove to be a parallel intrusion such as was suggested in the late Dr. Corstorphine's report on the geological prospects of the property made in 1916. He wrote, it may be remembered, that there was quite reasonable hope that other ore bodies existed, outside the main one, and added: "The existence of the Cymrie deposit is an encouraging feature, for it, too, is in the same intrusive mass." Shortage of labour and war difficulties have, however, prevented prospecting operations being carried on since that time so rapidly as might have been desirable.

* * * *

The Imperial Treasury and New Capital Issues.

On behalf of the Chancellor of the Exchequer Mr. Baldwin has announced a new scheme of control. In place of the old Committee of four deliberating in secret, there is to be an enlarged body working in panels of three members and taking oral evidence from applicants. All this is certainly an improvement and makes for greater freedom, but the main provisions make for greater stringency. Hitherto people have been free to ignore the Treasury if they cared to take the consequences, i.e., exclusion from the Stock Exchange list of quoted securities. But now a regulation is about to be issued under D.O.R.A. which will make it an offence to appeal for capital without a licence from the Treasury. According to Mr. Baldwin, the Treasury will give or refuse licences "with a view to preserving capital during reconstruction period for essential undertakings in the United Kingdom, and preventing any avoidable drain upon foreign exchanges by the export of capital," except under special circumstances. Opinions differ as to the wisdom of the new plan, and much will depend upon the kind of men who are selected to sit on the panels; they should be practical business men rather than officials. It is not clear how the different panels will arrive at a consistent theory, and some discrepancy must be expected in their decisions. The Secretary of the Treasury lays stress on the necessity of preserving an adequate share of the available capital "for undertakings which are essential for the speedy restoration of commerce and industry and the development of public utility services." There is much force in the argument that a good share of capital ought to be secured for such services; but this is not quite the same thing as saying that a Government committee ought to have autocratic power to say where new capital shall or shall not go. One of the old-fashioned pre-war methods of discovering whether a thing was essential or not, or whether it was more important than something else, was to leave the two claims on capitalists to fight it out, the idea being that the service which was really the more essential would be able to offer better terms to the owners of capital. In other words, if a thing is really important people will pay the necessary price for it, so that the producers will be able to command what capital they need.

Oil from Colliery Waste.

Many pertinent questions have been put by Mr. Robert Smilie to witnesses before the Coal Commission in England regarding the possibility of producing oil by the low temperature carbonisation of inferior coal and other bituminous material. Mr. J. A. Greene, secretary and technical adviser of the Government Committee on the Production of Oil from Cannel Coal and Allied Minerals, has stated that by the carbonisation of colliery waste over 300,000 gallons of crude oil, or about 100,000 tons per year, could be produced in Great Britain. The Committee has just issued its final report, and so keen are the members on having their recommendations carried into effect that they have themselves put up £100,000 for this purpose. Already several large similar schemes are under consideration, and it is probable that a new and gigantic industry will shortly be established in Great Britain. The world's oilfields are producing but a fraction of their pre-war output, and cannot be expected to attain their former importance as European sources of supply for several years. The world's consumption of oil is increasing, while production is on the down-grade. Motor transport of all kinds must inevitably increase, agricultural tractors have come to stay, and, most important of all, aviation schemes will create an enormous demand. Unless fresh sources are made available there will be a world shortage of petroleum in a few years' time. By the carbonisation of inferior coal miners would be able to work a bigger "face," and thereby enormously increase their output. The fact that from 15 to 20 gallons of crude oil—which now largely goes up the chimney in the form of smoke—could be extracted and converted into money, would enable such fuel to be sold at a price less than the value of the oil obtained.

New Taxation for Tanganyika Concessions.

"Tanks" and "Zams" developed a decidedly weak tendency in London in mail week, as the result of an article which appeared in the *Agence Economique et Financière*, a Paris journal. The following are extracts from the article:

"Belgium having been liberated this difficulty (of holding a meeting) also disappeared, and the Union Minière, discounting its first dividend, granted to the Tanganyika advances which allowed the latter to present to its general meeting last month a balance-sheet showing for the first time a credit balance and to pay off two of the coupons in arrears on its debentures. Expecting in a short time to receive further important sums from the Union Minière, the Board of Tanganyika contemplated also the payment of the balance of the interest left in arrears as well as the repayment of the debentures. Six weeks have passed since then and nevertheless the coupon on the debentures due July 1, 1917, the payment of which was expected on January 1, has not been paid, and there is no longer the question of the repayment of the debentures themselves. This is a new feature which has radically modified the situation in regard to the sums to be received from the Union Minière. As was stated in our telegram sheet of January 17, the Belgian Finance Minister has just submitted a draft law levying an exceptional tax on all Belgian persons or companies who have realised between July 1, 1914, and December 31, 1918, higher profits than those for the years 1912, 1913, and the first six months of 1914. The rate of this tax would be progressive: it varies from 20 per cent for profits below 20,000f. to a maximum of 80 per cent applicable to that part of the war profits exceeding 600,000f."

The article does not stop there. It proceeds in these words:

"The average annual profit works out to about 3,380,000f. for the period before the war, and at something like 24,500,000f. for the period of hostilities. The annual surplus is more than 21,000,000f. That is to say, that it would be taxed on the bulk at the maximum rate of 80 per cent. Thus the larger part of the profits accumulated by the Union Minière will be taken over by the Belgian Treasury—very justly, moreover—as without the war the price of the metal would never have reached the high level attained, and the expected distribution would be reduced in a very large extent. This is a great disappointment for the Tanganyika, who will in this manner lose the expected large revenue, and its Board is doubtless now wondering whether they will not have to pay back part of the sums received from the Union Minière as advances on the future dividends."

It had been generally expected that some sort of tax would be imposed by the Belgian Government, so that the draft law referred to is not altogether a surprise. The matter has yet to be passed by the Government, and it is not certain that the maximum of 80 per cent. will be exacted.

TOPICS OF THE WEEK.

AID FOR THE PROSPECTOR.

From Rhodesia comes a very practical example of how to help the prospector. The proposal is due to the initiation of Mr. J. G. McDonald, the Goldfields representative in Charterland. In introducing it, Mr. McDonald said that for some years they had been trying to evolve a scheme for prospecting the country, and his own company had spent about £10,000 last year on scientific exploration with most excellent results in one case, while in another the money was lost. There were numerous prospectors, mostly old hands, who were very keen to go out on the veld with a pick and shovel to try for something, and something might profitably be done to assist them whether ex-soldiers or not. Rhodesia, of course, is not the only country in the world suffering from lack of prospecting. A few days ago the following cable appeared in the *Cape Times*: "A Melbourne correspondent telegraphs: A conference of Australian gold producers passed a resolution asking for the removal of the Federal and State taxation on gold mining, also the admission of supplies needed by the gold mining industry duty free; also the payment of substantial Government rewards for the discovery of new gold fields. The conference also resolved to ask the Repatriation Department to consider the question of subsidising prospecting by returned soldiers." Mr. McDonald said he had given the subject a good deal of consideration and had convinced himself that they had been working on wrong lines, had been asking too much of the prospector. In the proposal he was going to put forward he asked little or nothing from the prospector. His suggestion was that they should get together a small management board and find such men as they considered they could have confidence in, and give them an opportunity of proving that their confidence was not misplaced. He proposed that they raise a sum of £4,000 to be provided as follows: The two Central War Funds £2,500, the two Chambers of Mines and the Small Workers' Association £500, to be subscribed by the various Chambers of Commerce in Rhodesia £500, and by the B.S.A. Co. Commercial Branch £500. This sum he would expend in fitting out 25 prospectors, paying them £20 per month, an equipment allowance of £25—no animals being included, as the old-time prospector could get along very well with four boys. Six months' allowance for each prospector and his boys would come to £120, so that each prospector would cost in all £145 for six months, or £3,625 altogether, leaving for office expenses £375. If it was found that any prospector was misusing his opportunity the allowance would cease at once. The management of the business would be left to a representative of the Comrades of the Great War, one of the Department of Employment of Returned Soldiers, and a representative each from the Chambers of Mines of Bulawayo and Salisbury and the Small Workers' Association. Mr. J. D. Morton to be manager and secretary. The main point about the scheme was this, that the men sent out be allowed to retain possession of whatever they found on the condition that 10 per cent. of what they obtained by sales be paid into a prospecting fund which might in the future go to provide a permanent Prospectors' Association. As to the raising of the money, various gentlemen who had subscribed to the Matabeleland and Mashonaland Central War Funds had suggested to him that some of the money in hand should be used for such a purpose as he now proposed. The committees of both funds had discretionary powers, and money spent in this way would be very real help to returned soldiers. The Chambers of Commerce could easily raise £500, and he was certain the B.S.A. Co. would provide their share of £500, for not only would any discoveries benefit the country generally, but also the Chartered Company. He did not propose that the prospectors should be returned soldiers only. There were many good men who fought in previous wars in South Africa but had not been accepted for the present war, and all who offered should be considered. The scheme is now being considered, and its fate will be watched with interest in the Union.

THE SAKALAVA OIL COY. AND ITS PROSPECTS.

The Two Cables—Operations Hampered by Inadequate Plant and Finance—The Necessity for Flotation in Europe—An Alluring Prize which can only be Gained by Sound Methods.

THE Sakalava Madagascar Proprietary Oil Fields, Ltd., has recently enjoyed a certain measure of prominence again by reason of cables which have been received from the company's manager in Madagascar relative to progress and results in the latest, or No. 6, borehole. Early in the year shareholders were circularised on the financial position and future prospects of the company. The chairman, in the course of this circular, expressed his opinion that the possibilities of finding oil were as good as ever, but that prospecting for oil with a limited capital was very unlikely to succeed unless by a lucky chance. "The best course," continued the chairman, "is to endeavour to have a refutation in Europe to provide for a capital commensurate with the size of the proposition. The time is opportune owing to the necessity for finding fresh supplies of petroleum and the active interest being taken in this direction in Europe." The directors decided to issue 18,000 shares and to ensure that the company should have sufficient funds to carry on until negotiations could be completed, certain of the directors guaranteed that at least 10,000 of these shares should be applied for. The directors considered that as far as possible the expenditure on drilling should be limited to the funds on hand and should cease when these funds are expended and that the money received from the issue of the 18,000 shares should be used for the purpose of refutation and to maintain the licences and the existence of the company until the refutation is effected. At the date of the issue of this circular the board were informed that the No. 6 borehole which we understand was located by the company's previous manager, Mr. Nichol, had reached a depth of 1,420 feet. Early in March the drill penetrated a measure of sea shells—a common enough occurrence in cretaceous strata—and shortly afterwards penetrated into oil measures. The following telegram was received in Johannesburg on March 27 from Mr. English, a director of the company, at Majunga, dated March 26: "Robinson (field engineer) telegraphs eighteen forty encountered continuous oils and upper layer hard dry now showing liquid oil and gas cementing off water before proceeding and testing flow." The shares at once spurted to 17s. and afterwards relapsed to 8s. Two weeks ago, however, there was renewed interest and the price advanced to 11s. on the announcement that the following cable had been received from the company's manager, Mr. Robinson, in Madagascar, dated April 7: "Depth nineteen hundred white clay. Underreaming cementing oil sand seventeen hundred and ninety-three thirty-two feet sand showing oil and gas." What the value of these two cables amounts to in so far as the chances of locating a payable oil well are concerned is difficult to judge from this distance. The oil well business is a branch of the mineral industry about which next to nothing is known in this country, and the wording of the two cables in itself is

not sufficient to enable one to form any estimate of the value possible or potential of the discovery. The first cable employs the expression "flow," whereas the second makes no use of a word which has helped to buoy up hopes that after years of disappointments and difficulties the Sakalava property may yet become of great value. The results of drilling in this No. 6 borehole have in any case been of the very greatest assistance in tiding the company over a critical period of its existence when public interest in the concern appeared to be on the wane and more funds were necessary in order to enable the company to retain its identity and titles until such time as other and better arrangements can be made for demonstrating whether the ground held contains oil in payable quantities or not. We welcome the chairman's candid expression of opinion that prospecting for oil with a limited capital is unlikely to succeed, and we shall still more welcome an announcement that flotation on an adequate basis has been arranged in Europe. The Sakalava board is to be congratulated on the plucky fight they have put up against many difficulties. But we do not think that the best results can possibly be obtained with inadequate machinery and a hand-to-mouth system of finance. The company's prospects of locating oil are good and oil wells are as alluring propositions as New Modders. But sound management, good machinery and adequate resources are needed, and for these reasons we urge the board to proceed with the negotiations for putting the concern on a proper flotation footing at the earliest opportunity.

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THE GREATER HEIDELBERG GOLDFIELDS.—IX.

An Examination of Past Results and Present Prospects.

[By a Special Commissioner of the "South African Mining and Engineering Journal."]

A Summing Up—One, Two or Three Payable Reefs?—A Study in Perspectives—The Value of Evidence Based on Appearance—The Problem of the Diabases—Sir Archibald Geikie's Declarations—Common Lithological Features—Mr. Bleloch's Sweeping Correlations—Encouragement not Carping Criticism Required—What Springs and Daggafontein may Prove—More Pick and Shovel Work Required—A Gold Field in which there is Room for Everybody.

WE have now concluded our survey of the mineral propositions embraced within the broad and comprehensive term of the Greater Heidelberg Gold Fields. It has been our concern to endeavour to give in brief and concise form the history of the gold-bearing areas which have recently begun to assume attractive importance as representing an extension of the legitimate Witwatersrand with all the vast possibilities which a greater Rand holds out. We have shown how the rise of the Far East Rand has in large degree proved the salvation of the South African gold industry and how capital and interest have for some years past been gradually inclining further and ever further to the south-east until to-day we find properties around Nigel and Heidelberg and even far distant Balfour are included within the schemes of a greatly extended Rand. The status of the propositions which are involved in this tremendous development and the results of work achieved to date in boreholes, shafts and drives have been given in considerable detail, whilst we have dealt at length with the rival schools of stratigraphical thought and the evidence adduced by geologists and mining engineers both for and against the theory that the reef worked in the Nigel mines, the reefs worked in the great mines of the Far East Rand and the reefs which were until quite recently the principle sources of the world's gold output on the Central Rand are all in reality members of the same great auriferous horizon.

THE TRIPLICATION THEORY.

Mr. Bleloch and his colleagues contend that these are three different reef series and if this surmise be correct we have not only to expect a big expansion of gold mining activity and output in the Heidelberg-Nigel area where several companies with which Dr. Hans Sauer and Mr. Bleloch are closely identified are operating—we are also brought face to face with the tremendous fact that all along the sinuosities of the Witwatersrand formation where profitable mines have been opened up there are two more reef series to be exploited. In so far as the Greater Heidelberg area is concerned, however, Mr. Bleloch and his supporters are concerned with what has come to be termed the two-reef theory only. In other words, the heterodox school contend that the Nigel Reef underlies the Van Ryn Reef, and that on the properties with which they are associated in the Heidelberg area the larger and richer "Van Ryn" bankets are found at a line of stratigraphical development considerably above the horizon of the smaller and less profitable reef worked by the Nigel mines. Mr. Bleloch and his apostles who have dared dispute the authority of an imposing array of doctors of geology, including Mellor, Hatch, Corstorphine and Henderson, appear to have found some support from Molengraaff and Carriek, but the great weight of local academic opinion is against them, and it certainly seems that the majority of the Rand's consulting engineers are more inclined to support the orthodox geology than the heterodoxy of those who seek to prove a duplication—or more correctly a triplication of this country's auriferous wealth.

OPINIONS AND THEIR VALUES.

We do not wish to attempt anything in the nature of an assessment of the relative values of geologists and consulting engineers. The latter are but little concerned with geology—they are technical business men who are in reality specialised administrators rather than consultants, and it is exceedingly questionable if they ever have enough time to closely study stratigraphical characters sufficiently thoroughly to arrive at very definite views on questions of academic interest. Consulting mining engineers are vastly more concerned with the effect than the cause of the deposition of gold in our conglomerate beds. The consulting engineer's job in this country is to supervise the work of extracting gold from its containing ores at a profit. The determination of gold values in a reef also falls within his province, so that the sphere of useful action of the geologist becomes decidedly restricted. The exact difference between a geologist and a stratigraphist has at various times been much debated. We believe that according to Mr. Scott Alexander's view a geologist thinks and a stratigraphist knows, but in so far as the Rand is concerned both these classes of scientists appear to have been mainly engaged in affixing nomenclature to various petrological systems and stimulating a healthy controversy as to the relation of a conglomerate bed or conglomerate beds to the profitable conglomerates of the legitimate Rand. The prospector again is pointed to as the man who in his untutored ignorance originally found the reef, but who obtained neither kudos nor credit for the discovery. And underlying all these strata of energy and thought is the primal force—God or Nature or Providence, call it what you will—the *fons et origo* of the gold.

We have deemed it necessary to interlude the foregoing paragraph on functions, not with a view to in any way declaiming the comprehensive science of geology, but because it is necessary to view opinions in their proper perspectives. If space permitted we might profitably extend this study so that it embraced the perspectives of the company promoter with a section of conglomerate bearing country in the Southern Transvaal in his grasp and power.

THE LOGIC OF COMMERCE.

The enquiry in any case brings us back to the basal fact that if a reef contains gold in profitable quantities and is continuous, the particular name bestowed upon that reef is of little concern or interest. But here along the line of the Witwatersrand formation there are certain developments of the conglomerate beds which have proved so immensely profitable to work in the past that if geological authority sets the seal of identity between these reefs and others, company flotation is made easy in respect of these latter deposits and actual development is not required to see the shares quoted at a good premium on the market.

CHALLENGES AND ARGUMENTS.

The Geological Survey of this country has done much valuable work in the past, and under the presidency of Dr. Rogers more data of immense value are being correlated in the Heidelberg district. It is not within the ability of any member of the staff of this journal to usurp the functions

of an expert department of the Government wedded to one job, employing the best talent available and with access to all plans, diagrams, borehole cores and sections of country. It is generally believed that it will be some months yet before Dr. Rogers has his report on geological conditions in the Heidelberg area ready for publication. We cannot anticipate Dr. Rogers' report, but we know that Dr. Mellor, his predecessor, after much painstaking investigation, has stated his conviction that the Main Reef Leader of the Central Rand is the same as the Nigel Reef, and that the reefs worked on the Far East Rand are identical with Nigel and Main Reef. Mr. Bleloch denies this. He contends that there are marked differences between the appearances of the reef which he calls the Van Ryn and the Nigel, and also between the Nigel and the Main Reef. We must admit that we have observed striking differences between the appearances of reef sections taken from different mines along what is according to the orthodox geologists the line of one continuous conglomerate bed. Mr. Bleloch argues that there are in the Van Ryn Reef certain pebbles the like of which cannot be found in any other reef horizon. His challenges so far as we know have not been taken up, but orthodoxy retorts, "You cannot attach any importance to the appearance of the reef; your geological thesis must be based on the sound principles of the relation of strata and not on the unsound basis of superficial appearance." Mr. Bleloch replies that the characteristics of the reef constitute the basis of stratigraphy since appearance enables one to discriminate between, say, a diabase and a sandstone.

THE LIGHTER SIDE OF THE CONTROVERSY.

To employ vulgar parlance, the debate narrows down to this. Orthodoxy says to heterodoxy: "You cannot judge a sausage by its overcoat"; and to this heterodoxy, in the person of Mr. Bleloch, retorts: "If a man tries to convince me that a brick house is the same as a house built of galvanised iron, or that an inkpot is the same as a Cape salmon, or that a pink book is the same as a green book, do you think I am going to let my senses deceive me?" The controversy, it seems to us, can easily degenerate into a comic prostitution of science, but as this is a serious paper and is pledged to deal with serious subjects in a serious manner, we had best leave the opera bouffe aspect of the situation alone and return to more dignified considerations.

THE QUESTION OF THE DIABASE.

Mr. Bleloch is at variance with most geologists and consulting engineers on the subject of the amygdaloidal diabase. He contends that it is not a flow and a marker as they do, but that it is intrusive and has no consequential relationship to the beds which lie in proximity to it. In the fourth article of this series we commented on discrepancies between the horizons of the diabbases and their thicknesses as shown in the sections of the four shafts of the Modderfontein Government Areas and also by the Daggafontein shaft and borehole. An examination of shaft sections and also of field sections does not convince one that the diabbases of the Witwatersrand system are amygdaloidal over the whole country as they are popularly supposed to be, and a further point to be mentioned is that the statement which has been made on local authority that diabbases are very rarely intrusive is not consonant with the best geological teaching. In these articles we have been constantly juggling with the names of distinguished geologists who have made reputations in South Africa, and it may not, therefore, be amiss if we call as expert evidence a geologist who has never dabbled in the complexities of the Witwatersrand formation but who is probably at least comparable with any seer of petrology who has given the benefit of his views to this country.

THE "MINING JOURNAL" CALLS EXPERT EVIDENCE.

The late Sir Archibald Geikie, K.C.B., D.C.L., LL.D., Sc.D., Sec.R.S., was the father of modern geological thought, and his monumental works on that science will remain uncontroverted long after we have forgotten the disputes excited by the one, two and three reef theories of the Rand.

In regard to the diabase (a term which appears to be somewhat loosely employed locally) let us begin by stating an indisputable scientific fact. Diabase is a plagioclase-angite rock which occurs both in contemporaneous flows and in intrusive dykes and sheets. Geikie, in his *Text Book of Geology*, states that many volcanic rocks occur in the forms of intrusive sheets as felsite, quartz-porphry, diorite, metaphyre, diabase, dolerite, basalt, trachyte, and others. In the sections on geotectonic geology and the chapter on intrusive sheets, under this heading he refers at some length to the mural escarpment called Salisbury Crags at Edinburgh. This is a sheet of crystalline diabase which might be taken for a conformable sheet regularly interposed between the sedimentary strata. But an examination of the beds on which it rests shows that it transgressively passes over a succession of platforms and eventually comes to rest at the east end on strata somewhat lower in geological position than those at the north end. The strata in contact with the diabase have been much hardened, the shales being converted into a kind of porcellanite and the sandstones into quartzite. The greater closeness of texture at the surfaces of contact forms one of the distinguishing marks of an intrusive as contrasted with a contemporaneous sheet. Another lithological characteristic of the intrusive as compared with the interbedded sheets is the considerable variety of composition and structure which may be detected in different portions of the same rock. Admirable examples of the alteration produced by eruptive masses are not uncommonly presented at the contact of intrusive sheets with the surrounding rocks. With all due deference to local expert opinion, we therefore submit that there is nothing inconsistent with the teachings of geology in the suggestion that the diabbases of the Southern Transvaal are not always found in contemporaneous flows and that Mr. Bleloch's contention that they are intrusive requires further investigation. The Government Areas shaft sections are worthy of close study in this regard. As against this we are confronted with the fact that over a large portion of the Far East Rand the "Bird amygdaloid" seems to have served a useful purpose as a marker, but there certainly appear to be one or two instances where it is difficult to reconcile its horizon and thickness at one point with its horizon and thickness at another point, not very many yards distant.

GEIKIE AND LITHOLOGICAL FEATURES.

Let us now consider the value of evidence based on appearance; in other words, the evidence of common lithology. We again quote Geikie; on this point he says: "The stratified portion of the earth's crust may be subdivided into natural groups or formations of strata each marked throughout by some common facies, that is by the occurrence of some characteristic genera or species of organic remains or a general resemblance in their palaeontological type or character or for limited tracts of country by some common lithological features." In the Witwatersrand beds we have no fossil evidences on which to work. The Southern Transvaal is notably poor in palaeontological features. That branch of biology which treats of the ancient life of the globe and its fossil organisms, either plant or animal, has no application here, and the testimony of rocks, it seems to us, must therefore be considered in terms of Geikie's last postulate "by some common lithological features." This is Mr. Bleloch's contention, and it is his complaint that he is not allowed by the orthodox doctors to place any value upon what is, to his way of thinking, the most obvious and logical factor of correlation available—"common lithological features," as Geikie terms it. But it must be observed that the great Scottish professor of the science of the earth clearly lays it down that the value of this evidence applies for "limited tracts of country." Whether Sir Archibald Geikie would acquiesce in the wide, sweeping and extensive correlations of Mr. Bleloch, who would identify the reefs on Randfontein with the conglomerates which are being opened up on the Heidelberg town lands on the evidence of certain common lithological features, is another question, but Mr. Bleloch's contentions in this respect have never been refuted in detail.

SPRINGS AND DAGGAFONTEIN.

As we have before remarked, we do not constitute the Geological Survey of the country, neither do we intend to usurp the functions of that useful body scientific, and we would prefer to await the evidence of more development—and particularly the evidence which will in the course of time become available when Springs Mines and Daggafontein become more closely linked up by driving, before we express an opinion on the academic value of Mr. Bleloch's geology. We repeat that we are more concerned with the economic aspect of all this pother about the pebbles, and as we understand that there is more than a possibility of the Daggafontein and Southern Van Ryn Companies deciding at some time on a policy of exploiting the overlying reefs which Mr. Bleloch identifies with the Van Ryn, we shall await the results secured in terms of inch-pennyweights on those reefs with more interest than we are able to evince in regard to striped pebbles, hard black glassy enclosures, and the problems of the amygdaloid. We should, too, like to see more testimony from the various properties under Sauer-Bleloch control in the Heidelberg area, and also from other propositions in that field before we feel certain that the doctors have made wrong diagnoses and that through professional obstinacy and short-sighted finance this country has scorned a hundred New Modderfonteins.

RECOGNITION OF ENTERPRISE.

But we do conscientiously believe that Mr. Bleloch's case is stronger than it is generally supposed to be. Moreover, we fail to see why there should be so much antagonism to his persistent efforts to prove an immeasurable expansion of the Southern Transvaal's gold-bearing formation. After all, Mr. Bleloch does not seek to rob existing companies of what they possess; he is merely endeavouring to prove a theory which, if correct, will immensely increase the resources of this country and greatly enlarge that output

of gold for which the world as a whole is crying out. It is our firm conviction that the gold resources of the Greater Heidelberg areas have never yet been appreciated at their true value. From the Nigel on to Balfour and beyond there are undoubtedly gold-bearing conglomerates, and we submit that the history of the exploitation of these deposits makes it clear that faulty management, erroneous ideas, and lack of capital have not in the past allowed a fair assessment of the commercial value of these deposits. Encouragement, not condemnation, is required if we are to settle this tremendously important question of the possibilities of immeasurably extending the scope of the Witwatersrand gold fields.

A FIELD BIG ENOUGH FOR ALL.

Let the Sauer-Bleloch interests therefore continue their work of preliminary exploitation, let the Southern Rand mines confirm Dr. Corstorphine's encouraging report by pick and shovel, and let the people who are busily engaged on the Balfour syncline carry on with their development of the promising Wilgepoort section. There is abundant room for the activities of all these enterprises, and whilst this journal discourages carping criticism of geological theories, we shall welcome pick and shovel work in the Greater Heidelberg areas as being in the best interests of the country at large and also as the only satisfactory means of determining the economic solution of the one, two or three payable reefs controversy.

Zaaiplaats Tin.

The Zaaiplaats results for the month of March, 1919, are as follows:—Days run, 26; concentrates won, 54 tons; estimated profit for the month, excluding Government taxes and directors' fees, £2,702 5s. 10d.; capital expenditure, £265 11s. 5d.

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THE MODDER "B" COMPRESSED AIR PIPE ACCIDENT.

THE official report on the fatal accident at Modderfontein B. mine on 25th February, 1919, prepared by Col. Bottomley and Mr. Robertson, is as follows:—A report was received at this office on the afternoon of the 25th ult. to the effect that the main compressed air pipe at the Modderfontein B. mine had been struck by lightning, causing it to burst and that several fatalities had resulted. On the following morning we visited the scene of the accident and found that the damage done was more extensive than at first reported, the underground pipes having burst simultaneously with the explosion on the surface. The mine was closed down as a result of the accident and was not restarted until after the necessary repairs had been executed, the 4th inst. It was evident on our first inspection that the explosion was not due to lightning but to internal conditions of one of the Bellis & Morcom's compressors. Owing to the fact that the mine staff was fully occupied in the necessary work of repairs, etc., the official enquiry was not opened until the 4th idem, the Court consisting of myself as President and Mr. R. A. Robertson, Inspector of Machinery, as member. Evidence was taken from the following witnesses, viz.: John Askew, resident engineer; Andrew Rigney, mine overseer; Tosten Peterson, miner; George William Faulkes, engine driver; Robert Tatterson, engine driver; James McIntee, engine room fitter; William Berklay Craggs, underground mechanical engineer; William Augustus Hall, hospital superintendent.

FINDING.

We find that natives "Ben" 312545, "Joseph" 315707, "M'Pukwane" 317,240, "Jan" 215195, "N'Tonie" 300053, "Notice" 302924, "Fifteen" 58847, died as the result of injuries received through the explosion of a compressed air pipe line at the Modderfontein B. mine on the 25th February, 1919. The analysis of carbonised material which was scraped off the interior of the compressor which initiated the explosion revealed the presence of an excess of copper oxide, which was probably a contributory agent in the explosion. We find that Regulation 188 (2), (3) and (4) of the Mines, Works and Machinery Regulations have been contravened.

DESCRIPTION OF PLANT.

The engine room at the Modderfontein B. central shaft is a large L-shaped building and contains the six compressors, two winding engines, a large switchboard controller room, and motor converter. Air is compressed by two 75 drill vertical Bellis & Morcom compressors, one Ingersoll Rand 25 drill, and one belt driven horizontal Reidler drill, all of which are driven by electric power from the Victoria Falls and Transvaal Power Company at 2,000 volts. There are also two steam driven compressors, one a King Reidler of 35 drills and one a horizontal drill machine. A 24 in. diameter main air pipe runs along the east side of the engine house, into which a delivery from all the six compressors enters. The main then turns the corner of the building by means of a heavy cast iron bend, in which is accommodated an oil separator, from which it continues to two large receivers. From the receiver it is split into a 16 in. and 6 in. and at the shaft head to a 12 in. and 8 in., in which sizes it descends the shaft. Control valves are fitted at the receivers and at the collar. An automatic temperature recording device is fitted on the main pipe between the entrance of the steam compressor and the four electric driven machines. It thus only records the combined air temperature as may be discharged from those of the four electric driven machines which may be working at the time. This is the only working temperature recording instrument on the plant. No fusible plugs are fitted on high temperature discharges for either h.p. or l.p. stage compressors. No pyrometers of any pattern are fitted, thermometers being the only means supplied for registering the temperature variations. The Bellis & Morcom engines are controlled by hand, the automatic controls having been discarded as being unsatisfactory some three years ago.

SUMMARY.

The accident occurred towards the end of the shift at 3.10 p.m. One cage was in the course of unloading at the collar of the shaft, and the compressor plant was practically in the act of shutting down. As the load at the station gets lighter towards the end of the shift the air temperature, judging from the temperature charts, rises during the last three hours that the machines run. This increase of temperature is due, according to the resident engineer, to the surges in pressure which take place in the pipe line, owing to the adjustment of the underground valves at or towards the end of the shift. The engine room fitter, McIntee, informs us it is due to the churning action in the h.p. compressors due to the restricting of the air inlets. This appears to be a pretty severe censure on the state of the valves for which he is responsible, but is probably quite true. The fact that one driver is on duty with three compressors, two of which had had their automatic controls discarded and thus depended on hand control only supplied a reasonable explanation. After the accident, and when the compressors were shut down, the discharge or delivery pipe of one of these Bellis & Morcom engines (No. 12) was seen to be very hot; the paint was badly burnt off and it could not be touched. Mr. Craggs' description was a "few degrees more and it would have been red." This located the nature of the trouble and on the h.p. cover and the valve covers being taken off, one of the delivery valves was found to be fractured, and a piece of about 3½ in. long broken out of it. The valve is of the Rogler-Hoerbiger type and the fracture was at the outer edge. The cylinder walls were coated with a film of oil which was in a very thick and sticky condition and appeared to be mixed with a considerable amount of foreign matter, in the form of dust, etc. (it was in places gritty to the touch), where it had accumulated above the line of piston travel. The valve guards (cast iron), the passages, and especially the walls of the valve chamber, were covered with a dead black deposit which appeared similar to that found on the top of a motor car cylinder when heavily carbonised. Samples of these deposits and of the lubricator oils were taken for investigation to the Chemical Laboratory. Immediately as the discharge pipe leaves the h.p. compressor it makes an upward and then horizontal bend. On the immediate top radius of this bend is set a spring loaded relief valve, and in front of this valve is fixed a thermometer at a distance of about 15 inches. This thermometer was bent about ½ in. out of the perpendicular, the dull metal of the back of it showing where the blast from the valve had impinged against it, proving that the valve had acted. This was on No. 12 machine (B. & M.). There was no fusible plug fitted on this h.p. delivery, and in the evidence it is shown that fusible plugs were tried but were found unsatisfactory, as they melted at a much lower temperature than was required and so caused a lot of trouble. On applying for a sample of these plugs, we received four, three of which were forwarded for testing to the Mines Laboratory. These were ordinary sprinkler plugs and were found to melt at 210 degrees F. Enquiries were made at the Ingersoll Rand Company for others more suitable, but as they could not be supplied, no further action was taken by the mine. One Veal thermometer was ordered, but being found to be out of order on delivery, it was returned for adjustment and the matter appears to have then dropped. One temperature recording instrument (from which a number of charts were in evidence) is fitted on the main pipe line in such a position that it registers the resulting temperature from a delivery mixture of as many of the electric driven compressors as may be running. It is behind the deliveries for both the steam driven compressors and so is not affected by them. The recording pressure gauge has not been used for a considerable time on No. 12 compressor. The temperatures of the intercooler waters are not recorded in any shape and with the two B. & M. compressors the sight gaps on the circulating water discharges, both from intercoolers and the compressor

jackets, are so high up (14 feet from floor) that it is doubtful if the temperatures are ever taken by thermometer, as, to get to these gaps one has to climb up or over various pipes and fittings. The drivers state that the temperatures of this water never varies and are 85 degrees F. for the coolers and 75 degrees F. for the jackets. The engine room fitter states it never varies 3 degrees during a twelvemonth, but they have no records to show it. He states that the h.p. discharge pipe bends are also examined and cleaned, also the pipes between compressors and receivers, every twelve months. Regulation 188 (2) calls for this every three months, and that records shall be kept. He also states that the intercoolers are cleaned every six months, and this is correct (deduced from time charged against the work). He makes also a most interesting statement to the effect that it was practically on account of a similar occurrence but on a very much smaller scale that the automatic controls were done away with. This was in Mr. Woodman's time, the late resident engineer, two years ago. The engine room fitter considers the deposit on valves, chambers and passages as very slight. Later on he forgets this statement and tries to blame the oil by offering a statement that he has reported to both the engineer and the storekeeper that the oil had lately been arriving on the mine in different tins to which they were accustomed, and that as these are filled in Johannesburg it would be easy to mix the oils while doing so. This witness also states that No. 12 compressor was examined in February last, and found to be in good order. This is not borne out by the internal conditions when opened out after the accident, neither can any record of this examination be found in the log books. Since the explosion an analysis of the oil samples shows that the oil deposit in the compressor is of an acid nature and that finely divided copper oxide was present in the black deposit taken from the discharge valve chest. As this was found to

flame spontaneously at 400 degrees F., the cause of the trouble is fairly obvious. The temperature of 400 degrees F. or more, if attained, was evidently due to the broken valve, the edges of which did not show a bright fracture although the compressor was shut down within a few revolutions after the explosion. This indicates a fracture of fairly long standing. The heating effects of the leak caused by this broken valve would naturally be heavily accentuated by the restricting of the air inlet when the load was light, and the heavy churning effect would very rapidly raise the temperature of the air. The impression gained after hearing the evidence is that this compressor plant has been run in a careless manner and without due consideration to important details called for by the Regulations. As instances, we may mention that no fusible plugs were fitted. Thermometers are not marked with temperature limits, and no instructions regarding these limits have been issued. The intercoolers have been cleaned every six instead of every three months. There are no signed records of these inspections and examinations although called for by Regulation. The temperature recorder was so situated as to handle the temperature of the combined delivery of four of the compressors only and not the delivery of individual units. The regulation of the oil feed was left to the drivers, without supervision or definite instructions. We are of opinion that in all probability the accident would not have occurred had all the above-mentioned requirements been properly observed. The presence of copper oxide in the oil and incrustations is most difficult to explain and further investigations in this direction will necessarily follow. The air supply inlet is situated in close proximity to the engine house and is surrounded by rock and ash deposits. The chambers are of skeleton construction, the spaces being covered with one thickness of heavy cocoanut matting. We consider that these conditions could be considerably improved by the provision of additional and finer filtering material.

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THE YEAR WITH THE CROWN MINES.

THE annual report of Mr. H. Stuart Martin, consulting engineer of the Crown Mines, is as follows:—The working profit for the year ending December 31st, 1918, at £410,612, showed a reduction of £263,321, due in the main to a fall in tonnage output of 239,000 tons and an increase in working costs of 3s. 5d. per ton milled—a disappointing result. The chief causes contributing to the decreased tonnage output, described in detail in the general manager's report, were the heavy floods in the early part of the year, and the influenza epidemic towards the close of the year. It may be noted, however, that the quantity of ore broken in the mine was very considerably greater than the amount hoisted. The increase in working costs was due primarily to the fall in output, and, secondly, to the large increases shown in the cost of white wages and stores. The development footage accomplished was not sufficient to maintain the ore reserve position owing to the points of attack in new areas being limited. Preparations have been made during the year to facilitate development, and it is intended to materially increase the development of new areas during the current year, and thereby not only maintain but strengthen the ore reserve position. Provision has been made out of working costs to provide a sum of money to increase development work, and this account was £35,000 in credit at the close of the year. At the commencement of the year 1918 the development account stood with a debit balance of £24,700. It is extremely important that a broad policy of development be carried out in the immediate future, in order to make available for stoping the undeveloped areas lying between the 16th and 19th levels. The position in this respect has been improved by the acquisition of Butters claims. The programme of development in the southern area below the 19th level (comprising the work of sinking No. 15 shaft from the surface and 5a sub-vertical shaft from the 19th level north of dyke) is well ahead of time. The work at the bottom of No. 11 shaft—stations, ore bins, and connections—has made excellent progress during the year, preparatory to sinking No. 14a shaft (sub-vertical) on the south side of the South Rand dyke. No. 11 shaft will require to be equipped with double cage hoisting in order to deal with the development from this area; this work is in hand and should be completed during the current year. The extreme southern area will continue to be a source of considerable capital expenditure for some years without any direct benefit to current operations. However, the policy of looking ahead and preparing for the future makes it absolutely necessary that the work of shaft sinking and long crosscut connections which form the main arteries that are required for future development of the area south of the South Rand dyke, must be steadily continued. The area from which the greater proportion of the richer ore has been produced during latter years, namely, the extreme eastern

section, or the old Robinson Central Deep area, is now rapidly being worked out. The central and west areas are of much lower grade; on these, together with the new areas to be developed in depth, the future profits of this company are dependent. Another factor contributing towards the demand for extensive development is the patchiness of the South Reef, and the indication that the South Reef is losing its value in depth. The tendency of this mine is, therefore, more and more towards becoming a one reef mine, viz., the Main Reef Leader. The policy, therefore, I have advocated is one of closer and more selective mining with higher sorting to meet the loss of high grade ore from the eastern end of the property. The introduction of machines of the Jack hammer type during the year has resulted in a narrower stope width and consequent improvement in values, and it is hoped by a continuance of this policy the mine will be able to produce a better grade of ore, together with the necessary tonnage. However, in a mine with the extensive ramifications of the Crown Mines, and heavy standing charges that are inevitable until considerable further concentration is made possible, it is necessary for the maximum native labour force to be maintained and an output of at least 180,000 tons milled per month be reached to enable fair profits to be earned. The payable ore developed amounted to 1,343,200 tons of an estimated value of 6·8 dwts. A satisfactory feature was the values disclosed in the lower levels of the western section of the mine as well as the encouraging results shown towards the end of the year from the small amount of development south of the South Rand dyke on the 19th level from No. 7 shaft. A satisfactory start was made at No. 15 shaft, which was sunk 925 feet. Attention is drawn to the complete details of shaft sinking and southern development furnished in the general manager's report. The ore reserve position, re-estimated at 31st December, 1918, was as follows: Main Reef Leader, 5,019,750 tons, value 6·9 dwts., stoping width 65 inches; South Reef, 3,278,350 tons, value 5·6 dwts., stoping width 64 inches; total, 8,298,100 tons, value 6·4 dwts. Of the above total, 1,194,800 tons valued at 7·5 dwts. per ton are for the present unavailable, consisting of shaft and safety pillars. Compared with the position at the close of the preceding year, the ore reserve shows a reduction of 689,900 tons and an improvement in value over all of 1 dwt. The reduction in tonnage is due to the shortage of development and a slight reduction in average stoping width. Since the close of the financial year, there has been some improvement in the supply of native labour.

Cold Refining and the Mint Question.

Though the Union Government has postponed action in regard to the contemplated mint in South Africa, the question continues to be much discussed in mining circles. Commenting upon the fact that the East Rand Proprietary Mines' return recently contained the intimation that, following the lowering of freight and insurance charges, the cost of realising the gold produced had been reduced by 16s. 3d. to 8s. 9d. per cent., the London *Times* says this represents a saving of nearly £300,000 a year to the gold mines on the basis of last year's output and brings the realisation charges down to practically the pre-war basis. But it seems likely that even the present charge, amounting to about £145,000 per annum, may be saved in the future, for it is well known that the Union Government has had under contemplation for some time past the establishment of a gold refinery and mint. The majority of the gold producers are known to be in favour of the gold being refined locally, in view of the considerable savings which may thereby be affected and the findings of the Incheape Committee. If the gold were refined and coined locally the producers would be relieved of the necessity of sending it to London to be sold, as has been the custom hitherto. The producers would presumably merely have to transfer it to their bankers, and they would then be in a position to dispose of it in the best market.

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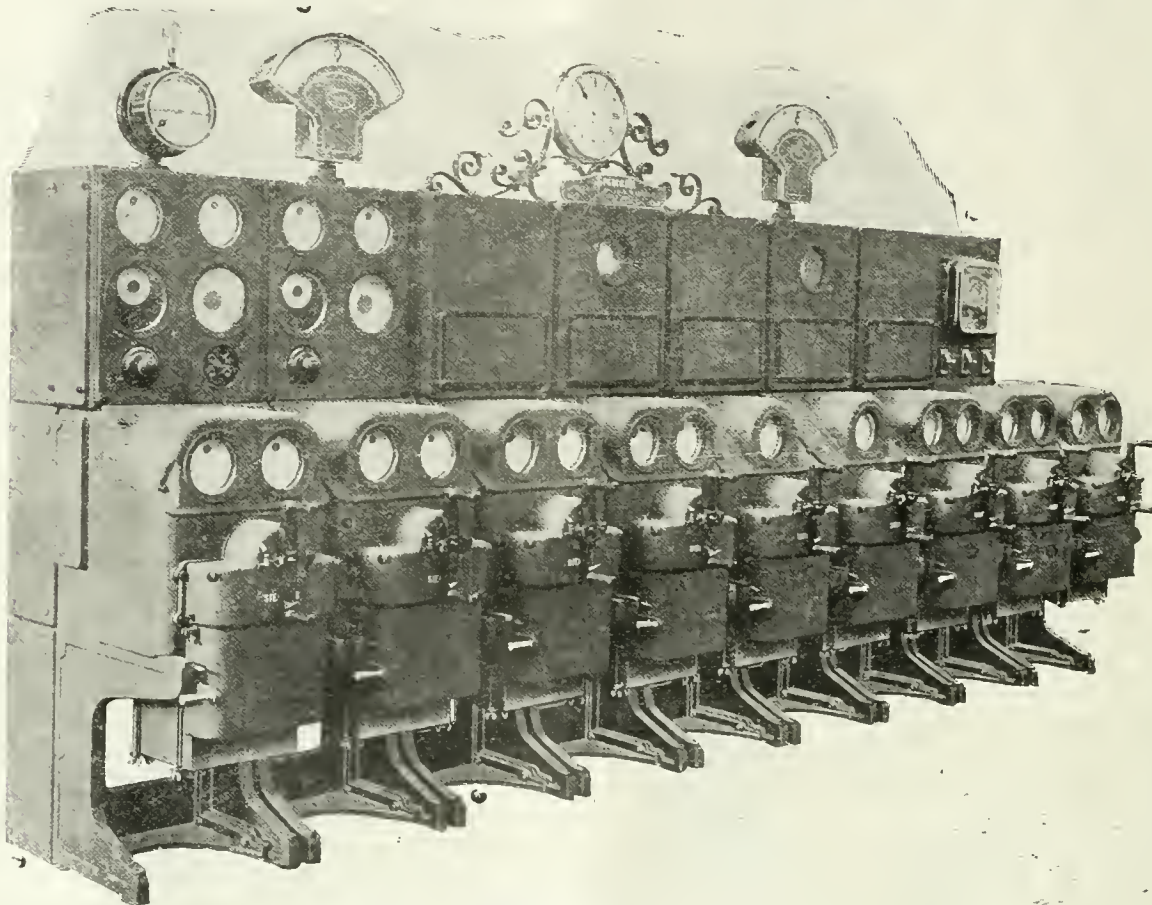
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THE BANTJES CONSULTING ENGINEER'S REPORT.

THE consulting engineer of the Bantjes, Mr. H. S. Martin, in his annual report for 1918, writes:—The year's operations resulted in a working profit of £13,697, of which £12,918 was obtained during the last two months, when the mine was being worked preparatory to closing down. During the remaining ten months, 189,400 tons were milled with an average yield of 24s. 4d. per ton, the working costs being 24s. 3d., and the profit £779, or 1d. per ton milled. Five months' operations out of the ten resulted in a loss. It is clear, therefore, that by careful and selective mining during those ten months it was possible to improve the yield to the extent of 2s. 2d. as compared with the preceding year; at the same time working costs continued too high for any profit of consequence to be obtained. Development was continued on a gradually decreasing scale; the most favourable places were attacked in turn, but results were on the whole so discouraging, that continued expenditure in this direction became inadvisable. This combination of nominal profit and discouraging development led to the decision to suspend operations. The whole situation was explained in detail in the quarterly report for the period ending 30th September, 1918, and it is unnecessary here to repeat it at length. The following estimate is given of the ore reserve available and accessible to the main incline shaft at the time of closing down, viz., 95,000 tons of an average value of 6.3 dwts. There remains a considerable tonnage, which includes blocks scattered throughout the mine; the average value of this is in the neighbourhood of 5.5 dwts.; owing to the position of this ore and its low grade, it cannot yield

a profit under present day costs. An area of about 26 claims situated on this company's eastern boundary, and which is quite inaccessible to any existing workings, has been leased to the Consolidated Main Reef Mines and Estate, Ltd., on a royalty basis of 1s. 6d. per ton mined. At the same time, the lessee undertakes to drive one heading, at this company's expense, towards the Bantjes main incline, in order to obtain some knowledge of the geological conditions obtaining in a quite unknown area of your mine. The results forthcoming will have an important influence on the policy that will be adopted at this mine, should it be re-opened at a later date when working conditions become reasonably favourable. Operations at the mine since the close of the year have been confined to withdrawing all useful material from the underground workings and to cleaning up the reduction plant. Mr. R. Beaumont, manager, Mr. G. Wilson, acting manager, together with the staff and employees, obtained results from the mine which were as good as could be expected under the extremely adverse conditions prevailing.

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RAND GOLD ON WARSHIPS.

Failure of the Naval Test Claim for Freight on £8,000,000—Admiral King-Hall vs. Standard Bank.

MR. Justice Baillhache in mail week delivered judgment in the test action which raised the point whether freightage was payable on bullion carried on a warship. Admiral Sir Herbert Goodenough King-Hall, formerly Commander-in-Chief of the Cape of Good Hope station, and Rear-Admiral Algemon Walker Heneage, formerly officer in command of H.M.S. "Albion," claimed a declaration that they were entitled to recover freight from the Standard Bank of South Africa in respect of the carriage of £8,000,000 of bullion on the "Albion" from the Cape of Good Hope to England in 1915. Defendants denied there was any custom to regulate the matter or establish liability on the Standard Bank, and further said that there was no contract of affreightment between the parties. Mr. Justice Baillhache said it appeared that in the older times it was the practice for merchants to put bullion or articles of great value on board a King's ship, and the remuneration was a matter of bargain between the merchant and the captain. In 1819 an Act of Parliament was passed, of which the first part prevented the carriage of such goods without special order, the second part provided for the payment to be regulated by Order in Council, and the third part prevented any private bargain being made between merchants and captains without such Orders in Council. On August 10, 1888, an Order in Council provided that the rate of freight should be 1 p.c. on the value of the articles, and that one-fourth go to the admiral in charge of the station, two-fourths to the captain, and the remaining fourth to Greenwich Hospital. On October 26, 1914, an Order in Council was made by which the old Order

of 1888 was annulled. A good deal of the argument in the case had turned on the meaning of the words "system of payment." The mining companies in South Africa were in the habit of sending their bullion down to the various banks at Capetown for safe custody. The bullion was sold to the Bank of England, who paid 97 p.c. for it, assayed value as assayed at Capetown. The remaining 3 p.c. they did not pay till the bullion arrived in England. That 3 p.c. was no doubt kept in hand in order to allow a margin for any variations in the assay which might show themselves when the gold was tested and tried on arrival in London. The mining companies had to pay all incidental expenses, including freight and insurance. Those were the circumstances when, at the end of 1914, or beginning of 1915, it was determined to transport a certain quantity of gold from Capetown to England. The total quantity transported at the time was £8,000,000, but so far as the Standard Bank of South Africa was concerned the amount from their vaults was £2,500,000 odd. Admiral Sir H. King-Hall had instructions to receive the bullion from the bank. It was taken from the bank under an armed guard, and put on board H.M.S. "Albion." The "Albion" called at St. Helena and Gibraltar, where part of the bullion was transhipped, and taken to England by other H.M. ships. At the proclamation of August 10, 1888, had been in force when the bullion was received on board H.M.S. "Albion" it could not be doubted that subject to the question of transshipment the plaintiffs, together with the officers of the other ships which completed the voyage, would have been entitled to have received their proportion of 1 p.c. on the value of the bullion in a very large sum of money. Before the bullion was received on board the Order in Council annulling the proclamation of 1888 had been made. The Act of 1819 provided for the regulation of the matter by Order in Council, and in no other way. He had no power to make such an Order or to supply the deficiency of an Order in Council. The claim, therefore, could not be sustained. It was obvious why the Order of 1888 was annulled. In this case the amount of bullion transhipped was something like £8,000,000. If one took the rate of freight payable under the Order of August, 1888, that represented something like £80,000, a far too large sum to allocate as mentioned in the Order. Judgment was entered for the defendants, with costs.

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THE WEEK IN THE SHAREMARKET.

A Short Week—Rise in Modder East—Continued Weakness of Springs.

At the opening on Thursday Springs Mines made 48s. 9d., but at the call came back to the previous day's price of 47s. 9d. and 48s. Prices at the call showed very few changes. Government Areas, Van Ryn Deeps and Modder were a trifle lower. Crown Diamonds unchanged. Van Dyks, which had been confidently tipped last week, fell to 2s. 6d., their highest price having been 5s. After the call New Modders were sold at £26 5s. On Tuesday, after the four days' holidays, the market opened with a better tendency, showing advances in Springs Mines and Crown Diamonds: 2s. was offered for a thirty-day call on the latter and 2s. 6d. wanted. At the call the improvement was general and the few sets back were merely nominal. A large parcel of Modder Easts changed hands at 19s. 4½d. and more were wanted. Springs made a ninepenny recovery. General Mining and Finance, which had disappeared from view for many years, made a modest reappearance with a buying bid of 3s. 6d. No business was done in New Modders or the Bs. and Deeps. Robert Victors were in good demand with a betterment of 2s. on the last buying price. Before lunch the strong demand for Modder Easts raised them to 19s. 9d., sales and buyers. On the other hand, adverse influences brought Springs down to 48s. once more. At the opening on Wednesday the only business done was in Modder Easts at 19s. 10½d. The same buying order that kept the stock going all Tuesday is evidently still in force and a considerable number of shares must have been absorbed. The options only made a small move of 2d. each. The call was irregular. A further drop in Springs, and an unexpected one in Consolidated Langlaagtes. Sub Nigels have been for some time quite out of the hunt. Very little attention is being paid to Government Areas, Van Ryn Deeps or Geduld Props. Crown Diamonds weakened to the extent of 1s. on the previous day's rise. On Thursday morning there was brisk dealing in South-Western Diamonds, a sale of one hundred going through at 80s. and numerous odd lots at 82s. 6d. The call was dull with the exception of good business in Modder Deeps and continued firmness in Modder Easts, which, for the first time during quite a long period, are now at par buyers. The outside dealings for the few days under review consisted of:—Sales: South-Westerns, 70s. to 80s., and 82s. 6d. for odd lots. Makganyenes have fluctuated between 45s. and 48s., the last sale being at 47s. 6d.; Union Tins, 5s. 9d.; Sakalavas, 8s. and 9s. for odd lots; Koodoos, 22s. odd lots; Phoenix, 1s. Sellers of Henderson's Estates, 5s. 6d. Buyers of Monteleos, 11s., and sellers 13s.

Business at the opening on Friday was limited to a sale of Makganyenes at 47s. 6d. At the call Springs, which had fallen overnight to 46s. 3d. from 47s. 6d., had a further drop to 45s. 9d. The following are the changes in quotations:—Sales: Bantjes, 2s. 2d.; Bush Tins, 1s. 9d., closing sellers at 1s. 8d.; Coronation Freeholds, 1s. 5d.; Main Reefs, 10s., and seller; Crown Diamonds, 22s. 9d., and buyer; Government Areas, 91s., and seller; Hume Pipes, 33s. 6d.; Leeuwpoots, 23s. 3d., and buyer; Modder Deeps, £7 11s. 3d., and seller; Modder Easts, 20s. 6d., 20s. 3d., 20s. 4½d.; Pretoria Cements, 69s.; Princess, 2s.; Sub Nigels, 20s. 6d.; Springs, 45s. 9d. Buyers and sellers: Anglo-Americans, 21s. 9d.; Brakpans, 61s., 67s.; Glynn's Lydenburgs, 21s., seller; Geduld Options, 11s. 6d., 12s. 6d.; Modder B., £7 16s. 3d., £7 18s. 6d.; New Modders, £26 3s. 9d., £26 7s. 6d.; New Geduld Deeps, 4s. 6d., 4s. 9d.; Heriots, 9s. 6d., 10s. 6d.; Roberts Victors, 11s., buyer; S.A. Lands, 6s. 1d., 6s. 2d.; Sub Nigels (10s. paid), 10s. 9d., 11s. 3d.; West Springs, 22s. 6d., 22s. 9d.; Van Ryn Deeps, 68s. 6d., 69s.; Wit Deeps, 15s. 6d., 16s. 3d.; Wit. Townships, 27s. 6d., sellers; Zaaipplaats, 10s. 7d., 10s. 9d. Members had the pleasure of welcoming back Captain Donald Viney, who looks remarkably fit after four years' service.

	Wed. 16th.	Thurs. 17th.	Tues. 22nd.	Wed. 23rd.	Thurs. 24th.
African Farms	13 0*	13 3*	13 6*	14 0*	13 9*
Anglo-American Corporation	25 0*	22 0	21 0*	—	21 6*
Apex Mines	7 6*	7 6*	7 6*	7 3*	7 3*
Bantjes Consolidated	2 2	2 1*	2 2*	2 1*	2 1*
Brakpan Mines	62 0*	62 0	64 0*	64 0*	63 6*
Brick and Potteries	4 6*	4 6*	4 6*	—	4 6*
Bushveld Tins	1 6	1 8	2 0	1 9*	1 9
Cassel Coals	22 6*	22 6*	22 6*	22 6*	22 6*
Cinderella Consolidated	4 3*	3 9*	3 6*	—	3 9*
City and Suburbans	5 6*	6 0	—	—	—
City Deeps	51 6*	51 6*	51 6*	51 6*	51 6*
Clydesdale Collieries	23 6*	23 6*	23 6*	23 6*	23 6*
Consolidated Investment	24 0*	25 0*	25 6*	25 6*	25 0*
Consolidated Langlaagtes	20 0*	18 3*	18 6*	17 0	—
Consolidated Main Reefs	10 6*	10 6*	10 0*	10 3*	10 3
Consolidated Mines Selection	23 0*	23 0	—	—	—
Coronation Collieries	52 6*	52 6*	52 6*	52 6*	52 6*
Coronation Freeholds	1 3*	1 4	1 3*	1 5	1 4*
Crown Diamonds	22 3	22 6	23 3	22 6*	22 6*
Daggafontein Mines	22 6*	22 6	22 6	22 3*	22 6
East Rand Coals	2 3*	2 4*	2 4*	2 5	2 5*
East Rand Deeps	0 10*	1 0*	1 0*	1 0*	0 9*
East Rand Mining Estates	—	17 0*	17 0*	17 0*	17 0*
East Rand Proprietary Mines	5 9*	5 6*	—	5 6	—
Eastern Gold Mines	1 4*	—	—	1 10*	1 3*
Frank Smith Diamonds	3 9*	3 10	3 9*	3 10*	3 11
Geduld Proprietary Mines	45 0	45 3*	45 0	44 6*	44 9
Ginsbergs	2 0*	2 6*	—	1 0*	—
Glencairns	1 0*	—	—	1 0*	1 0*
Glence Collieries	6 0*	6 6*	6 0*	—	—
Government Areas	91 6	91 3	91 6	91 6	91 6*
Johannesburg Board of Executors	30 0*	30 0*	30 0*	—	30 0*
Klerksdorp Props.	—	1 1*	1 1*	1 1*	1 1*
Knight Centrals	8 1	8 5	8 3	8 1*	8 4
Lace Proprietary Mines	—	20 0*	20 3*	20 3	20 3
Leeuwpoot Tins	23 3*	23 3*	24 0*	23 0*	—
Lydenburg Farms	8 7*	8 7*	8 8*	8 9	8 8
Middelveld Estates	1 0*	1 0*	1 2	1 0*	1 0*
Modderfontein B.	155 0*	155 6*	160 0*	158 9*	155 0*
Modderfontein Deep Levels	147 6*	147 6*	147 6*	148 0	150 0
Modder Easts	19 3	19 1½	19 4½	19 10½	20 0
Do. Options (3 years)	3 6*	3 4*	3 6	3 8	3 7*
Do. Options (4 years)	4 8*	4 8*	4 6*	4 8*	4 11
Hume Pipes	32 0*	32 0*	34 6*	32 0*	33 0*
Natal Navigation Collieries	22 3*	22 3*	22 3*	—	22 6*
National Banks	£15+	—	—	£15½+	£14½
New Boksburgs	111+	1 6	1 6	1 9	2 0*
New Eland Diamonds	25 0*	25 9*	26 0*	26 0*	26 0*
New Era Consolidated	10 0*	9 9*	9 9*	10 3	10 0*
New Geduld Deeps	4 9*	5 0*	—	4 9*	4 9
New Heriots	10 0	10 3*	—	10 0	11 0*
New Kleinfonteins	11 0	11 0*	11 0*	11 0	11 3
New Modderfonteins	530 0*	527 6*	530 0*	530 0*	528 9*
New Unifieds	3 6*	4 0*	3 6*	4 0*	3 6
Nourse Mines	13 0*	12 6*	—	13 6*	13 6
Premier Preferreds	—	—	140 0*	140 0*	140 0*
Pretoria Cements	67 6*	67 9*	69 6*	69 6*	68 9*
Princess Estates	2 5*	2 4*	2 4*	2 3*	2 3
Rand Collieries	3 3*	3 3*	3 0*	—	—
Rand Nucleus	1 11+	1 7*	1 9	1 9*	1 10*
Rand Selection Corporation	78 0*	74 6*	78 0*	—	—
Randfontein Deeps	4 6*	4 6*	4 6*	4 6*	5 0*
Randfontein Estates	—	15 0*	15 0	15 0*	15 0*
Roberts Victors	12 6*	13 0*	15 3	14 0*	—
Rooiberg Minerals	6 0*	6 6*	6 3*	6 1	5 9
Ryan Nigels	3 3*	3 3*	3 3*	3 0*	3 3*
Shebas	1 9*	1 9*	1 9	—	1 9*
Simmer Deeps	1 6*	1 6*	1 6*	—	1 6*
S.A. Lands	6 4*	6 4*	6 4*	6 4	6 10
Springs Mines	47 9	47 9	48 9	47 9	47 6
Sub Nigels	21 3*	21 3*	21 0*	20 9*	20 9*
Swaziland Tins	15 0*	20 0*	—	—	—
Transvaal Lands	—	—	23 0	22 6*	22 0*
Transvaal G.M. Estates	—	—	—	12 6*	13 6*
Van Ryn Deeps	68 9	68 0*	68 9	68 9*	68 6*
Village Deeps	16 0*	16 6*	16 0*	16 0*	17 0*
Western Rand Estates	1 7*	1 7*	—	1 6*	1 9*
Witwatersrands	—	17 6*	17 6*	—	—
Witwatersrand Deeps	—	15 6*	16 0*	15 9*	15 9*
Wolhuters	2 7*	2 8*	3 0	2 9*	2 9*
Zaaipplaats Tins	11 6	11 6*	11 6*	11 6*	—
New State Areas	23 0*	23 0*	23 0*	23 0*	23 0*
Southern Van Ryns	9 0*	9 0*	9 0*	8 9*	9 0*
S.A. Alkalis	29 0*	29 0*	29 0*	29 0*	30 0*
Tweefontein Collieries	22 6*	—	—	22 9*	22 6*
West Springs	22 6*	22 3	22 3*	22 6*	22 9*
Union Corporation	15 6*	—	15 6*	15 6*	15 6*
Van Dyks	3 6	2 6	2 6*	2 9*	3 0

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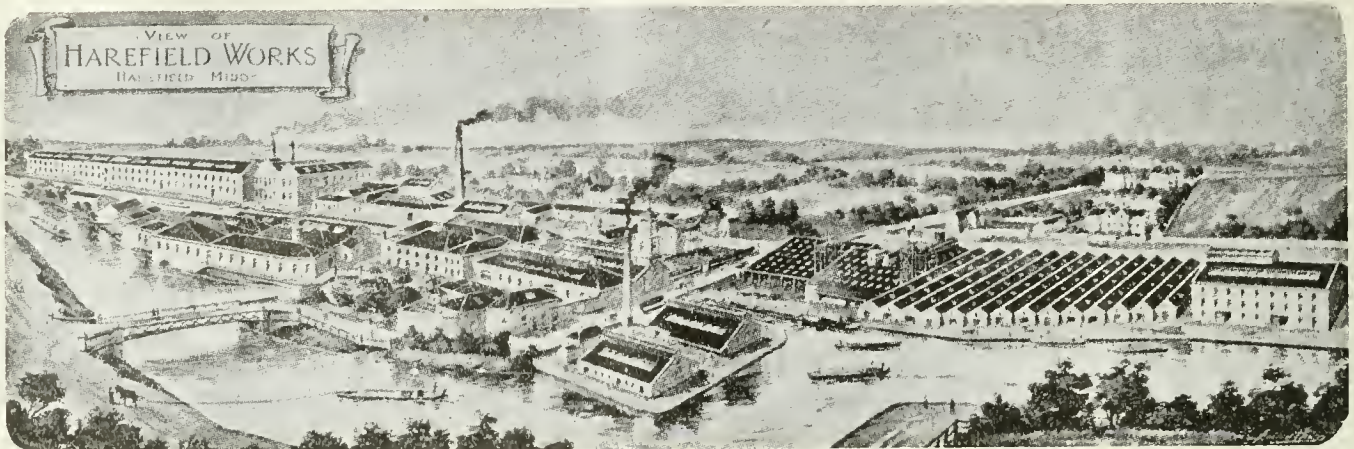
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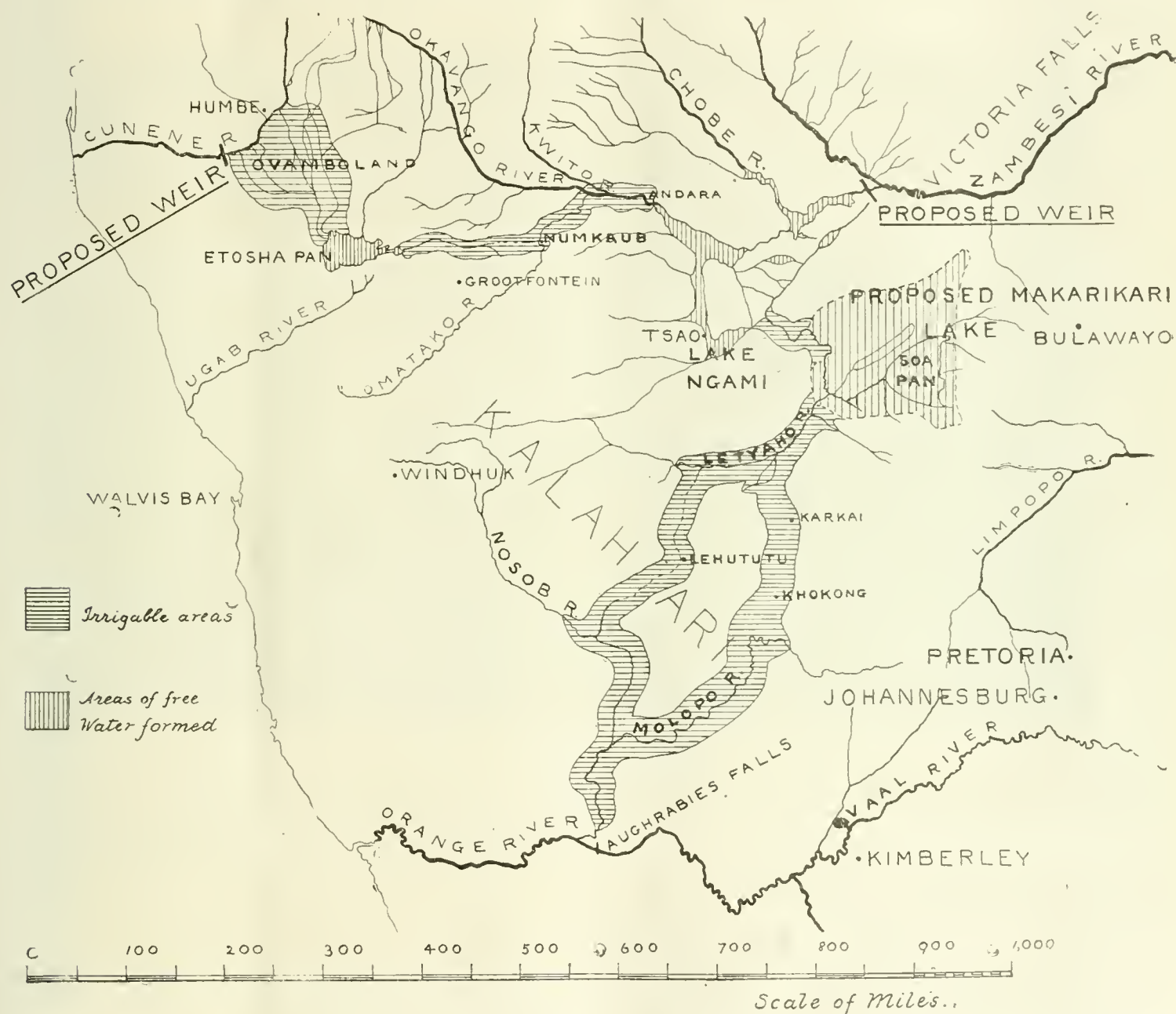
ENGINEERING SECTION.

THE KALAHARI LAKE SCHEME.

A Matter of National Importance—General Review of the Proposed Undertaking—A Simple and Comparatively Inexpensive Enterprise.

THE admirable series of articles upon "The Kalahari Lake Scheme" which has been contributed to the *S.A. Mining and Engineering Journal* by Professor E. H. L. Schwarz has given us the outlines of an undertaking that should be regarded by every one in this country as a matter of national

Schwarz shows in a comprehensive kind of way how these results are to be achieved at a cost which should be by no means prohibitive, and by such engineering means as are well within the capacity of the Irrigation Department of the Union.



MAP SHOWING SITE OF PROPOSED WEIRS IN PROFESSOR SCHWARZ'S SCHEME.

importance. From this point of view it may be compared with such vast enterprises as those of the plains of Mesopotamia and of the valley of the Nile. In its results it will probably prove of greater value than either of these, inasmuch as it will not only reclaim thousands of square miles of potentially fertile territory but will bring about climatic changes in the sub-continent which will tend to improve the agricultural and pastoral conditions of a much wider region. The accompanying map compiled by Professor

THE SCHEME IN BRIEF.

The essential requirements of the Kalahari irrigation scheme are the damming of the large floods of water that flow from the Angola highlands, on the one side to the sea and on the other to the already sufficiently filled channel of the Zambesi. In earlier years these streams ran southwards towards the Kalahari, watering, on their way, the responsive lands of the Ovambo land plain and the country to

the east, towards the Zambesi; thence, through Lake Ngami into the great Makarikari depression, and far down the Kalahari, perhaps into the Orange River itself; and finally, after a journey of between one and two thousand miles, discharging their beneficent waters into the South Atlantic Ocean. The picture which is thus conjured up before the mind, as one follows Professor Schwarz in his descriptive wanderings adown the Cunene river rushing through its recently carved gorges to the sea; along the Okavango oozing uselessly into the sands, or where the Chobe spills its wasteful flood above the Zambesi rapids, is a fascinating and most impressive one. Instead of the abundant rainfalls of the Angola highlands running over a short course with little or no advantage to the earth, as far as the 18th parallel of latitude, they will be induced to cover another ten degrees and rejuvenate a region which comprises nearly one-third of that portion of South Africa lying south of the Victoria Falls. The dams which are to effect this momentous physical change will be located where the Cunene river begins its rapid descent to the south-west and where the Chobe, choked with reeds and sand forces an easier way to the Zambesi. The Cunene will thus be compelled to wander through its many ancient channels over the Ovambo-land plain into the Etosha Pan, along the Omatoko, and finally into the Okavango river, which, being thus reinforced, will be able to flow with a strong current into Lake Ngami. On the other side, the Chobe River, diverted again to the west, will return to the same lake. The overflow will pass into the great Makarikari depression, and may cover an

area whose eastern edge will be roughly 50 miles from the town of Bulawayo. In course of time, when the thirsty soil has been satiated, we may expect to see the Makarikari waters make their way once more down the easy bed of the Letyaho, whence a large part of the 50,000 square miles of Professor Schwarz's irrigation scheme will be watered by means of numerous canals. Another portion of the Makarikari overflow may pass down the desert valleys to the Molopo and thus serve to irrigate another two or three hundred miles of country and convert it to its legitimate purposes as the finest ranching district in the world.

THE PROBABLE RESULTS.

A glance at Professor Schwarz's map will enable us to learn something of the immense benefit, from an agricultural and pastoral point of view, which would result from such a far-reaching scheme as that which it is proposed to effect by simple means and with a comparatively moderate expenditure. In addition to the many thousands of square miles which will be turned to profitable and most necessary uses there will be thousands of square miles of moving water which will saturate the thirsty atmosphere with moisture and induce a copious rainfall over regions which are now arid and deserted. Beyond the confines of this region the average humidity will be increased, the temperature will be rendered more equable, and life will be made more pleasant. Room will be provided for the expanding population of South Africa, and the natural resources of the Union will be increased immeasurably.

Qualities Demanded in Mining Timber.

Mr. R. H. Crozier, of Melbourne, in an article on eucalypt trees, says that the chief qualities demanded in a timber to be used in mining are: (1) Transverse strength, (2) strength in end-compression, (3) hardness, (4) durability. Except under special circumstances, the eucalypt timbers should not be used in unseasoned condition, as is frequently the case. The full strength and durability are not developed except when properly cut and seasoned. An inch board may be reckoned to take eighteen months to season properly under natural conditions, and it will be seen in the table dealing with the seasoning of Western Australian timbers that logs of over 100 square inch sectional area are still incompletely dried after six years' exposure. I would therefore recommend that some auxiliary method of seasoning should be adopted, and that scientific experiments be instituted to determine which is the most suitable for the purpose of seasoning and also of preserving timber to be used in positions rendering it specially liable to decay. Experiments should also be made to determine the most suitable species to cultivate under the conditions of each locality and the most profitable manner of planting the seeds, whether by broadcasting or nursery cultivation. I would again emphasize the importance of entrusting the selection of the seed to an expert, in order that the foundation stock may be from the best representatives of their species.

Locomotive Efficiency.

It sometimes happens that an invention pioneered in one country is taken up by another and developed more rapidly and successfully than in its original home. This did not occur, however, with the invention which created the modern industrial era—the steam engine. Both in the stationary form and in the locomotive British engineers have never lost the lead which the genius of Watt and Stephenson gave them. For speed and efficiency the performances of the modern British locomotives are unsurpassed. During the war British railways carried an enormously increased traffic although hundreds of locomotives were sent to France, and some even as far as Mesopotamia, for military transport purposes. In France and Flanders, moreover, hundreds of miles of light railway were constructed and equipped from locomotive and rolling stock factories in Britain. New types of engine were rapidly evolved for this unusual form of transport; and Sir Douglas Haig has testified to the remarkable efficiency of the loco-

motives and other equipment turned out in large quantities at short notice. The success of the British locomotive works in this phase of military engineering is due in part to the fact that for many years they have been turning out locomotives for every variety of special purpose—mines, quarries, docks, plantations, factories and so on—in every part of the world. The experience they have gained during the war will be therefore of positive assistance in solving the transport problems of countries overseas. Moreover, the war has increased their productive capacity and encouraged the adoption of means for achieving a more rapid output of locomotives with steel and other metals of the highest grade and machined within the finest limits of precision.

The Lead in the Air.

It is claimed that Britain's technical advance in airplane power represents a lead of two or three years over other countries. War has acted as a powerful tonic for the British aviation industry. The progress of fifteen or twenty years has been crowded into four, under the pressure of an unlimited demand for scouts, fighting machines, bombers, seaplanes, and flying boats. In our admiration of the amazing valour of the airmen themselves we are apt to overlook the arduous work of the technical men and the engineers who gave the airmen the instruments they used so well. Incalculable difficulties were encountered in the evolution of new types of aeroplane. Every improvement had to be made the subject of research and test before it could be adopted; and after its adoption machinery had to be constructed or adapted for its production on the large scale. It was calculated that anything from twelve to eighteen months elapsed between the inception of a new idea and its appearance on the field. To add to the complications, novel demands were constantly being made by the fighting men, involving changes in the size, design, and equipment of machines. Under such conditions it is all the more creditable that the British air service led the way in excellence of design and manufacture. Comparisons proved British technological and engineering superiority in this field. Now that aviation is turning from war to peace, British aircraft factories are capable of producing the most reliable and efficient types for the carriage of mails, goods and passengers. Rapid preparations are being made for the provision of landing places and aerodromes at convenient stages for long-distance services from one part of the Empire to another. At the same time, meteorological and wireless telegraph services are being organised to ensure the safety of regular air services.

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A New Jackhammer—Ferreira Water Attachment.

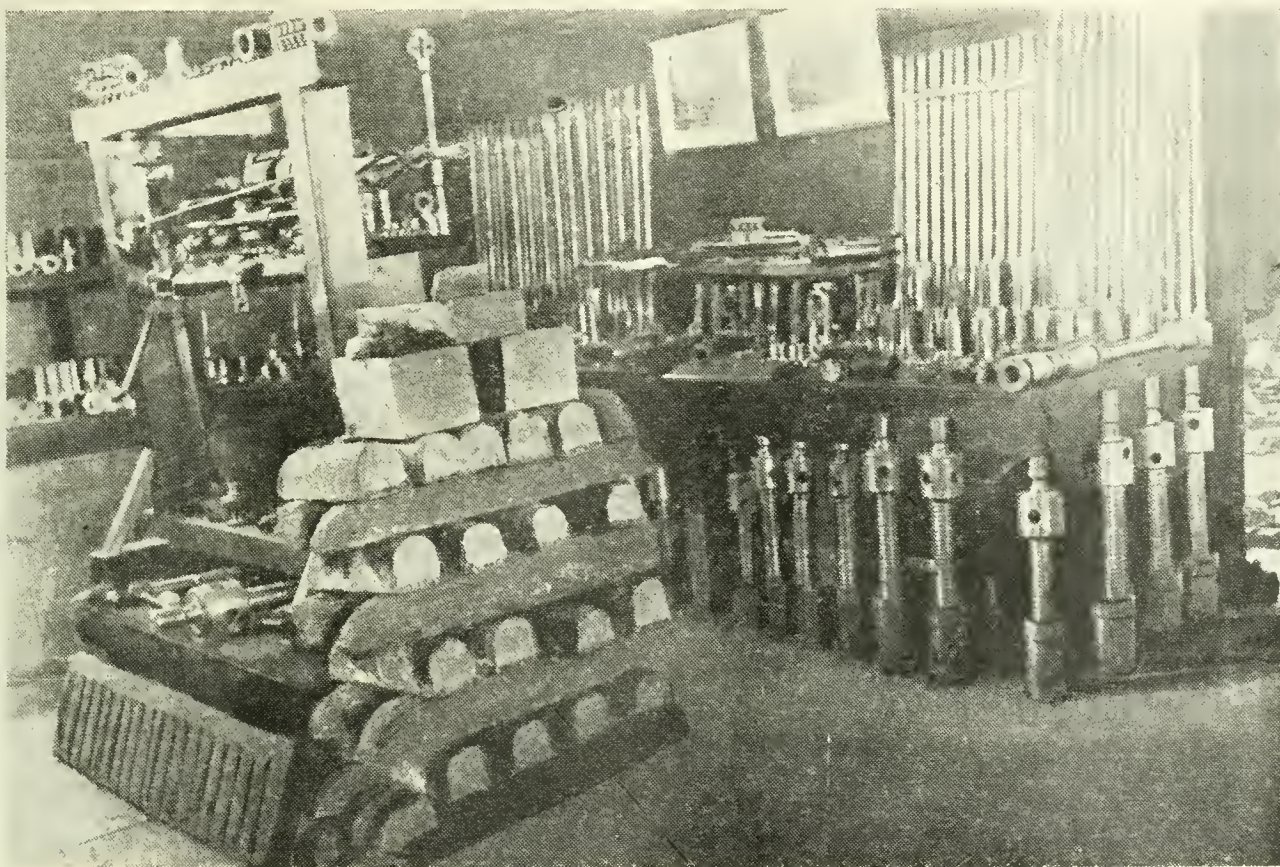
Among the items shown at Messrs. Delfos' fine exhibit at the Agricultural Show there is a reciprocating rock drill shown in full section equipped with the Ferreira water attachment for supplying water to the borehole during drilling. It will be noticed from examination of this section that this attachment is applicable for any make of reciprocating rock drill, the water going in at the back end and right through the piston and drill to the bottom of the hole. With this attachment there is no possibility of atomisation taking place, and the drill can be used at any angle. Two photographs are shown of the drill in operation in a stope, drilling an up hole, the cuttings being washed out

British and American makers. Another feature of the exhibit is a special air-feed rig, fitted with a regulating valve which controls the air-feed pressures from zero to the maximum in a manner at once simple and effective.

PRETORIA IRON.

A further exhibit on the same stand deals with the products of the Pretoria Iron Mines. A fine casting run direct from the blast furnace is on view, which speaks highly for the quality of the ore. A full description of the works appeared in our last issue.

The predominant note of the whole Delfos exhibit is



VIEW OF MESSRS. DELFOS' EXHIBIT IN THE INDUSTRIES SECTION.

of the hole as fast as made, and the drill is thus always cutting new ground. The claims made for this machine are: That the production of dust during drilling is practically eliminated; drilling speed is increased; the maintenance cost of this type of machine is known by mining men to be low.

The whole of Messrs. Delfos' output is of local manufacture and they are in a position to supply a variety of over 200 spare parts for rock drills. An interesting speciality exhibited is a complete jackhammer drill, the total weight of which is only 38 lbs. This machine is so constructed as to cut vibration to a minimum. The drill has only half the number of parts used in the construction of the imported article, which obviously reduces the expense of upkeep in comparison. From the point of view of safety it has the advantage of being practically fool-proof. It has been running since December last on two of the principal mines of the Rand, against similar types of drill made by

finish and accuracy. No less than 200 different kinds of articles were shown, including spares for every type of drill in use on the Rand. A silver medal was awarded to Messrs. Delfos, but it seems probable that this decision will be reviewed by the judges, and that a gold medal will be given to reward the high degree of excellence attained by this exhibit.

Institution of Mining and Metallurgy.

With the authority of the Army Council, papers will be read before the Institution describing mining operations in the war. A paper has been prepared by Major H. Standish Ball, R.E., A.I.M.M. (late Assistant Inspector of Mines, G.H.Q., France), on "Work of the Miner on the Western Front," which deals with all phases of the work on the Western Front. This will be illustrated by a number of lantern slides, and later on the Institution will publish it, with other papers on the subject.

All-Electrical Manufacture.

A great deal used to be said about the dependence of the British electrical industry on German and other foreign sources of supply, but most of what was alleged about the backwardness of British production was inaccurate. Britain was by no means the only country in which the Germans had managed to secure a foothold in certain "key industries," and the electrical manufacturers of Great Britain deserve far more credit than has ever been given them for the way in which they managed to keep on producing almost every class of electrical plant and apparatus in spite of German mining and gas attacks. The Ministry of Reconstruction recently formed an Engineering Trades (New Industries) Committee to investigate the production of goods either not made in the United Kingdom before the war or made in small or insufficient quantities. This Committee had an Electrical Branch Committee, and in the report of the latter we naturally find mention of all the articles alleged to be "captured" by the Germans. About sixty different kinds of articles were considered, but the Branch Committee reported that in the majority of cases they do not come within the scope of their reference. With few exceptions, they report "ample manufacturing facilities undoubtedly exist, and, in many cases, existed before the war, for meeting the whole requirements of the United Kingdom and the Colonies, and, in certain cases, of taking care of the export trade to other countries." The legend of "dependence on German enterprise"—so sedulously fostered by German agents—arose out of the fact that the existing British manufacturing facilities were not fully employed. Under the new regime, with the British electrical manufacturers organised in powerful combinations and working together in energetic associations for research and commercial progress, we shall hear no more of the legend. The few gaps which existed, as in certain insulating materials, electric glassware and porcelain and so on, have either been closed or are about to be closed. British electrical manufacturers are now fully equipped to supply, in any part of the world, any electrical demand from a complete electric power undertaking or railway system to a pocket lamp.

British Electrical Organisation.

There is much discussion in Great Britain of super-stations—that is to say, of electric generating plants larger than anything yet installed and supplying current in unlimited quantities to electric supply undertakings, railways, steel works, textile mills, and other big users over a very wide area. Electric supply is, in fact, being treated on a national basis; and enterprise on that scale implies manufacturing firms capable of turning out steam turbines of 50,000 kilowatts each, and constructing transformers, cables, and switchgear for transmission of electric power at very high voltage. During the war the electrical manufacturers of Great Britain have been fortunate in their freedom to develop towards this position. So enormous has been the demand for electric power and electrical plant of every description that the war has been a powerful stimulus to their productive work. Incidentally, they have been reorganising themselves into larger groups, each working along certain definite lines and capable of undertaking the manufacture of all types of power station plant, cables, telephones, meters, lamps and innumerable other accessories, the most ambitious schemes of railway electrification, complete contracts for hydro-electric and other power schemes and for the electrical operation of collieries, textile mills, and so on. The electric cable makers of Great Britain, who set the standard of excellence in electrical transmission of power, have greatly developed their output during the war. In addition to these large combinations there are many strong firms specialising in various types of electrical plant and apparatus and continuously perfecting such machinery as steam, gas and oil engines, electric motors, transformers and instruments, switchgear, heating and cooking apparatus. The British electrical manufacturing industry is, in fact, still better equipped than it was before the war to meet foreign competition at home and abroad, and also to carry out every form of electrical enterprise, from the financing thereof to the operation when completed. Ever-increasing attention is also being given to research, both by individual electric firms and by the industry generally, in association with the Institution of Electrical Engineers and other scientific bodies.

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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Heidelberg District Map.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Can you not do something to stir up the dry bones of the Government Printing Office, Pretoria? There is an excellent map of the Heidelberg district, yet, in spite of the interest now being taken in that area, a copy of it is not available; requests for copies at the news agencies being met by the mortifying reply, "Out of print"—Yours, etc.,

"STRINGER."

Johannesburg.

19th April, 1919.

Heidelberg: An Appreciation.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I shall be glad if you will allow me as a prospector striving for many years to open up new mineral areas in this country to say that I greatly appreciate the able and interesting articles by your Special Commissioner on the work being done in the Heidelberg district. In those articles the Commissioner has dealt truthfully and fairly both with the work with which I am associated and with the work of others on other lines, not in agreement with our views. In the same unbiassed way you were good enough to publish a description of the new nitrate fields in the Prieska district which the S.A. Nitrate and Potash Corporation is opening up, we feel sure, for the economic benefit of South Africa and humanity in general, as well as for their own advantage. It is something new to find pioneer work dealt with on these broad and unbiassed lines, and I write to thank you for it; and at the same time to point out the contrast between the tone of your articles and the attitude of some of our "leading geologists" who treat both prospectors and their work with disdain. No papers are ever read now by such men before the Geological Society of South Africa, and none of them is ever appointed to the Council of that Society, although it was founded,

not by the doctors, but by the ordinary prospectors and observant geologists of this country. It was these men who practically alone discovered our great mineral deposits and proved their value almost invariably in the face of the most arrogant and bigoted opposition of the "authorities." It has almost come to be the fact that the practical discoverer of the country's mineral wealth is regarded as a sort of malefactor to be taxed out of livelihood by the State, and snubbed by the jargon-mongers advertised as authorities. This country needs the practical knowledgable and devoted prospector, and I trust I read in your articles the signs of a new spirit of recognition of the prospector's value.—Yours, etc.,

W. BLELOCH.

Premier (Transvaal) Diamond Mining Co., Ltd.

(Incorporated in the Transvaal.)

DIVIDEND No. 16----DEFERRED SHARES

NOTICE IS HEREBY GIVEN that a Dividend on Deferred Shares of 6s. 3d. (Six Shillings and Threepence) per share, free of the Union of South Africa 7½ per cent. Dividend Tax, has been declared payable to Shareholders registered at the close of business on the 30th April, 1919.

WARRANTS in payment of the Dividend will be issued to South African Shareholders from the Head Office of the Company, Johannesburg, as soon as the necessary returns have been received from the London Office, but owing to the irregularity of the mail service there may be some delay.

By Order of the Board,

T. EDINGTON, Secretary.

Head Office, Cullinan Building,
Simmonds Street, Johannesburg.
17th April, 1919.

Premier (Transvaal) Diamond Mining Company, Ltd.

(Incorporated in the Transvaal.)

DIVIDEND No. 29. - Preference Shares.

NOTICE IS HEREBY GIVEN that the Twenty-ninth Dividend on Preference Shares of 125 per cent., or 6s. 3d. (six shillings and threepence), per share, less the Union of South Africa 7½ per cent. Dividend Tax, for the half-year ended 30th April, 1919, will be payable to all Shareholders registered at the close of business on that date.

Warrants in payment of the Dividend will be issued to South African Shareholders from the Head Office, Johannesburg, as soon as the necessary returns have been received from the London Office, but owing to the irregularity of the mail service there may be some delay.

Coupon No. 29 in respect of the Dividend on Bearer Warrants can be presented for payment at the Head Office, Johannesburg, on and after the 24th April, 1919, and must be left five (5) clear days for examination.

By Order of the Board,

T. EDINGTON, Secretary.

Head Office, Cullinan Building,
Simmonds Street, Johannesburg.
22nd April 1919.



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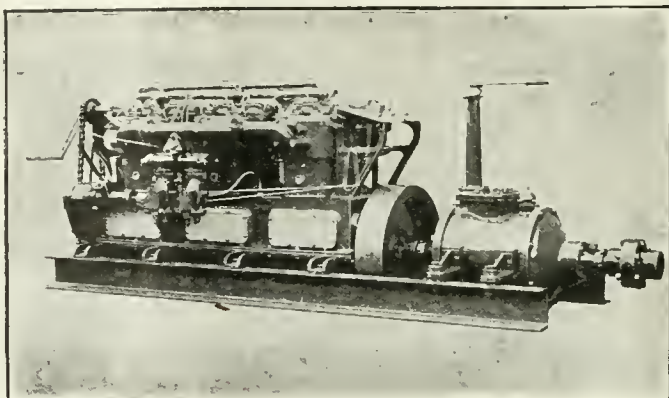
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RHODESIAN & BELGIAN CONGO SECTION.

Hartley Small Workers—The Platinum Discoveries—Cam and Motor—Falcon Mines— A Recrudescence of Influenza in Katanga.

A well-attended meeting of the Small Workers' Association was held in Hartley a few days ago, Mr. E. A. Begbie, M.L.C., presiding, and many important matters were discussed, the sitting lasting from 11 a.m. to 4 p.m. A resolution was passed in favour of giving war service men total exemption from inspection until nine months after their discharge, irrespective of the date at which they left the country. The scheme evolved by Mr. J. G. McDonald for the encouragement of prospectors was thoroughly discussed. It met with strong opposition on the ground that while the big companies held large blocks of claims it was absurd to send out men to locate fresh ground. A resolution was finally passed declining to support the scheme. A motion that the expense of any prospecting scheme be borne by the owners of the minerals was defeated.

The recent reservation of some 37 square miles against prospecting in favour of the Consolidated Goldfields was criticised by the meeting. Mr. H. P. Selmes, the Mining Commissioner, explained that the reservation was temporary, and that if, as a result of the expert's report, dredging operations were undertaken, they would be on a big scale and benefit the district.

Commenting on the recent discoveries of platinum and associated metals in the Somabula gravels, the "Bulawayo Chronicle" remarks: "It is not by any means clear when the presence of platinum was first ascertained in this country. Some fifteen or twenty years ago a prominent mining engineer claimed to have discovered small amounts by assay in the body of rock now known as the Great Dyke. Later on it has been often stated that this precious metal can be detected in the chromite of the big deposits worked at Selukwe. The first authoritative announcement, however, seems to have been that of the late Mr. A. E. V. Zealley that platinum occurred in a copper-nickel and iron-impregnated serpentine near Indlwa. As, however, the assays of a forty-to-one concentrate were only reported as 1½ dwt., or about 1 grain per ton of the original rock, it cannot be said the announcement was of more than academic interest. The more recent statement by Mr. H. B. Maufe that substantial amounts are present in the fine concentrates obtained in working the Somabula gravels for diamonds certainly appears more calculated to lead to something of real mining importance. At first blush, indeed, a content of 10 oz. 12dwt. per ton of platinum and osmiridium combined, worth something like £200, would appear to be quite sensational, especially as the concentrate is reported to contain 'a large amount' of gold. From what is known of the field it is probable that the gold, of which the presence has long been known, but has been strangely neglected, bulks considerably more largely than the platinum metals, and the concentrate may well be worth £300 or more per ton. It is scarcely surprising, therefore, that Mr. Maufe's leaflet should have occasioned considerable excitement in the Midland districts.

Sir Abe Bailey's engineers are visiting the Cam and Motor and all Gatooma is fervently hoping that this is the prelude to the mine's revival.

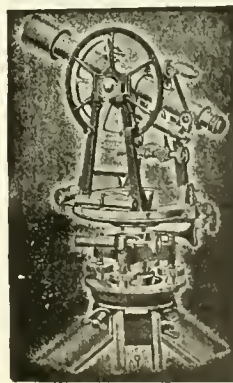
For the year ended June 30, 1917, the price of standard copper averaged £126 15s. per ton; for the succeeding twelve months the average was £120½, and the present quotation is £74. As was to be expected from this course of the Metal market, and the inevitable upward movement

of working costs, the report of the Falcon Mines for the year ended June 30 shows a big fall in profit. Sulphide ore alone was dealt with to a total of 170,074 tons, as against 203,049 tons of combined sulphide and oxidised ore in the preceding twelve months. The output of blister copper and the fine copper, gold, and silver contents thereof considerably exceeded the corresponding figures of 1916-17. This fact is attributable partly to the higher grade of the ore—which was slightly above the average of the reserves—but mostly to improvement in extraction of metal contents, viz., of the gold contents 82 per cent., against 77 per cent., and of the copper contents 87 per cent., against 77 per cent. Nevertheless the accounts show a working profit for the year of £88,449, against £194,265.

Prospects do not appear at all bright, remarks *The Statist* of this report. The length of the ore body at the 10th level is 180 feet, compared with 250 feet in the 9th, the width and value being about the same. Not enough is known about the 11th level yet to say much, except that the profitable section of the deposit appears as if it may be smaller. The price of copper is much lower now than a year ago, and in view of the world's immense stocks of the metal and the enormous output capacity of America it seems probable that values will recede further.

There has been a mild recrudescence of Spanish influenza in the Katanga copper fields. Two hundred and twenty native cases occurred at the Lubumbashi smelteries, in the period March 22-30 inclusive, with a mortality of fifteen, practically a 7 per cent. death rate. All these boys had been brought to Lubumbashi after the subsidence of the epidemic of five months ago. There were also four European cases, all slight. Two of these had been attacked in October last.

At Likasi, the second in importance of the copper centres of industry, which lies a mile or two from the railways, at about eighty-six miles from Elisabethville, there were reported, in the same period, a hundred and fourteen native cases and a few European, these latter of slight character, and finally at a wood-chopping camp, at kilometre 223, twenty-eight of the native gang were seized, and one succumbed.



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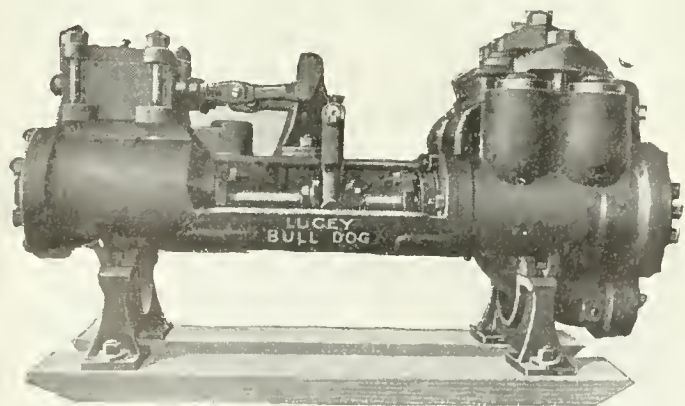
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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Good Average Business at Show—Trend of Trade—Peace Nervousness—Mines Reducing Reserves—American and Baltic Timber—Iron and Steel Easier—Oil and Colours Bad Trade—Second-Hand Machinery—Shipping.

The Agricultural Show gave us a pleasant relief from strikes, and when these notes are issued there is a great probability of the strike being settled. Be that as it may it is pleasant to record that the agricultural machinery people did a good average business this year, as compared with last, for both spot and forward delivery. Several of the firms, however, were not anxious to book forward delivery orders, as they still think it problematical when things ordered now will arrive from oversea. The principal business was done in pumps and irrigation outfits, ploughs, cream separators, windmills, oil engines, delco-light apparatus, ploughing tackle and cultivators. The chief novelties were Fordson's and Austin's tractors. A large number of farmers and country storekeepers visited the second-hand building material yards, and a fair number of orders was booked, with the usual proviso that they had to await the sawyer to cut the material when the strike was over.

TREND OF BUSINESS.

What with the four days' holiday on the Commercial Exchange and this being the last week of the month, business has been stagnant. What, however, seems to be happening in a small way is that people are realising that stocks cannot be replaced at the present quotations; therefore they are more liberal in purchasing. There are a few consumable lines still held by speculators, which are in a measure a drag on the market; but as they are being absorbed no doubt in a short time these floating surplus stocks will disappear. In connection with this subject the latest American cables state that the American prices are lower than at any time during the past two years. Further, that it is expected that prices will advance as soon as peace is signed and reconstruction works start. Now this subject of peace has been very much discussed of late, and undoubtedly it has had a bad influence on the higher financial and trade happenings. This important matter was referred to in a Reuter's message, thus proving that a great deal of nervousness exists in Paris and London. A Paris journal says: "In the event of Germany's refusal to sign the peace preliminaries certain military and naval arrangements will immediately come into force. A complete plan has been worked out by the Allied naval authorities." The next chapter can well be left to the imagination. At the Modder Deep meeting on Wednesday the chairman said that the policy of reducing the quantity of stores carried was being continued. The reduction was not taking place quite as rapidly as was hoped for, but, comparing March 31 with October 31, the decrease in value amounted to £21,000. This is disconcerting for the Commercial Exchange, but it is such an important pointer as to the policy adopted that it cannot be ignored.

AMERICAN HARDWOOD TIMBER AND BALTIC DEALS.

There is still an easier tendency in Baltic timber, as ordinary lengths of deals are quoted at 1s. 6d. to ordinary contractors, and on the Commercial Exchange transactions have been put through at 1s. 1½d. This is attributed to the fact that business has been at a standstill here in Johannes-

burg for nearly three months, that is, during the builders' strike. Flooring, 8½d. to 8¾d.; and ceilings, 6d. per ft. It is understood that the timber contracts have all practically lapsed, therefore the builders when starting work will be able to obtain their supplies at the lower rates. During the Show there was a large number of inquiries from country people and a fair number of orders booked at the current rates when forwarded. Business in American hardwood is quite fair as the cabinetmakers are at work. Burma teak is 21s. per cube, Japanese oak 1s. 6d. per ft., American 1s. 4d., poplar 1s. 5d., all 12 in. x 1 in.; Venesta panelling, 8½d. per ft. All these stocks are fair. Galvanised roofing iron, 24 gauge, 1s. 5d. to 1s. 5½d. per ft. Although business is extremely dull, yet so far as can be ascertained the timber yards have not put off any of their establishment staff.

IRON AND STEEL.

The three-page account in this journal last week in reference to the Pretoria Iron Works has been much discussed in the engineering and moulders' circles, all of whom are much interested in obtaining pig iron for their works. The satisfactory feature is the two illustrations, one of which shows a quantity of the ore stacked by the side of a blast furnace. It so happened that the writer was in Pretoria on Monday last and had an interesting conversation with a workman who was very enthusiastic over the progress being made, and also in connection with the new blast furnace under construction. One substantial fact is the siding, or rather branch railway, off the Pietersburg main line, just before reaching Church Street West. This in a measure is a kind of guarantee that the railway people have confidence in the future of this important enterprise. Business in local iron continues excellent from all parts of the country, as far off as the Belgian Congo, as well as Rhodesia, which are taking more and more week after week. Delagoa Bay also is not at all a bad customer. The imported iron is lower at 45s. to 47s. 6d. per 100 lbs. for ½ in. round. Flat

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galvanised iron is 50s. There were many inquiries during the Show for 2 in. galvanised piping for irrigation purposes, and windmill connections.

OILS AND COLOURS, WHITE LEAD.

Business in the distributing houses is still very disappointing and wherever one goes the strike is a subject immediately touched upon, because the demand for paints and painters' sundries is becoming more and more a dead letter in Johannesburg, having dropped from anything between 50 and 75 per cent. In fact, it is difficult to get any of the managers or partners to talk about prices or business. However, the following are the approximate quotations: Linseed oil, 10s. to 11s. imp. gall.; turps, 75s. to 77s. 6d. per case; white lead, 75s. to 80s. merchant to merchant, and 10d. to 1s. to the trade; best American salad oil is practically unobtainable, the nominal quote is 140s.; South American ditto, 120s.; South African nut oil, 70s. to 75s., all at per case of 2-4's; olive oil, 25s. to 27s. 6d. per gall.; castor oil, 70s. to 75s., being firmer, as no stocks have come from India lately; lubricating engine and cylinder oils are from 40s. to 45s. per case; imported grease (American), £45 per ton; best local, £35; ordinary local, mining, £27½ to £30 per ton; glycerine, medicinal, 3s. 6d. per lb.; ditto, raw, for explosive purposes, 1s. 6d. to 2s.; imported disinfectant fluids, 6s. per gall. in bulk; and 6s. 6d. small quantities; creosote, 4s. 6d. to 4s. 9d. per gall; imported tar, 3s. 6d. to 4s. per gall. The plate and sheet glass trade is exceptionally quiet, as well as Johannesburg-made mirrors, and there are plenty of accumulated stocks, let the demand be never so great from the furniture makers and builders when things become normal.

SECOND-HAND MATERIAL.

In passing through several of the larger yards it was noticed that they were well filled with piping, more especially that suitable for irrigation purposes, apparently brought to light to attract the agricultural community attending the Show. Prices are said to be a trifle easier, but nothing of importance. Second-hand tram rails are being sent to the Witbank coal district, and there is a better demand for tramway accessories for equipment purposes for the many new lines under construction in the coalfields of the Transvaal and Natal. There have been enquiries for economisers, but these are anything but plentiful. The demand for sound roofing iron is good and the price firm at 1s. per ft. and over. Business is fair, but not quite so good during the Show as expected, but orders may yet be sent into various yards upon which preliminary negotiations took place. These principally refer to portable engines and all kinds of oil engines for farmyard work.

BRITISH AND AMERICAN SHIPPING

There are over twenty steamers on the way from America or already booked from New York. Goods are arriving very freely at the coast ports and cargoes arriving from week to week become more varied, although not so much so as in pre-war days. They consist of mine material, soft goods, groceries, machinery, and maybe motor cars and their accessories, as all our garages seem to be on the tiptoe of expectation of getting their consignments which were ordered a long time ago. The British shipping is not much easier as regards giving accommodation for homeward passengers, but every week will now tell, as the following

outward bound boats (subject to alteration) are given, which is proof positive that things are very much on the mend. The following left Britain and are due to leave: April 1st, "Durham Castle"; 2nd, "Berwick Castle"; 2nd, "Dunvegan"; 5th, "Field Marshal"; 15th, "Walmer Castle"; first week of April, "Intaba"; April 4th, "Ingoma"; 26th, "Belepheron"; in May, the "Professor" and "Guildford Castle." There is also a whole list of sailings by the Clan line of steamers.

VARIOUS TRADE ITEMS.

The model plant at the Show for Hume pipe making was exceptionally well patronised. It is stated that the Leeds Corporation are now using concrete pipes for their water supply, as they have been demonstrated to be cheaper and better than steel and iron pipes for that purpose. The cable advice of Sir Percy Fitzpatrick states that the city engineer of Leeds is most favourably impressed with the Hume process. This information will be received with much satisfaction in South Africa, where the Hume pipe industry is well established. As regards another South African industry, the South African Nitrate Corporation, Ltd., operators have begun work at Prieska Poort, where big faces of nitrate are exposed, and the first treatment plant is in course of construction there. In this connection the following information will be of interest:

SOUTH AFRICAN NITRATES

As was stated in an article in the journal last week, an exhibition of nitrate of potassium crystals (99 per cent. pure), extracted from Prieska shales and samples of ground shale fertilisers fortified with nitrate of potash was given by the South African Nitrate and Potash Corporation, Ltd., and their exhibit was distinguished by a First Class Diploma—Highly Commended. Potash of late has become almost unobtainable in the country, kraal manure or "Karoo ash" being practically the only source of supplies. Of these the supplies near rail have been pretty well exhausted, and the Acting Chemist of the Agricultural Department has pointed out (see *S.A. Journal of Industries*, Aug., 1918) the danger of using a product containing "a large quantity of sodium salts" which accentuates the tendency of our soils to "brakness," while "the admixture of sand and other foreign bodies" makes the quality doubtful. Accordingly, the opening up of a colossal field of potash and nitrogen is an event of the first magnitude to South African agriculture. Farmers and butchers are now paying 1s. 3d. and upwards for saltpetre for curing. The curing industry, which has grown immensely during the war, will profit by the new supply. Again, there is a large demand for nitric acid for explosives and for other young industries (e.g., paint, etc.), to which an impetus must be given by the Prieska output.

THE CEMENT-GUN.

The Cement-Gun is at present in use at the Modder East, Ltd., for making brattices underground. These brattices were formerly made of bricks, but we understand from the mining people that the "Gunite" brattice is a much more satisfactory job in every way, and does not cost 50 per cent. of the brick brattice. We are informed that Springs Mines have ordered two Cement-Guns for similar work. The machine is extensively used for making panels for walls and roofs in buildings, and also for the protection of iron and steel from corrosion. The United States Reclamation Bureau, which has charge of irrigation work in the U.S.A., uses Cement-Guns in lining irrigation dams, canals, and feeder channels, so as to prevent seepage.

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INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS

- May 20.—S.A. Land and Exploration Co., Ltd.—Sixteenth Ordinary General Meeting, 38, Meischke's Buildings, at 12 noon.
- May 23.—West Springs, Ltd.—Second Ordinary General Meeting, at 10.30 a.m.
- May 23.—Daggafontein Mines, Ltd.—Fourth Ordinary General Meeting, at 11 a.m.
- May 23.—Springs Mines, Ltd.—Tenth Ordinary General Meeting, at 12 o'clock.
- May 23.—Brakpan Mines, Ltd.—Sixteenth Ordinary General Meeting, at 2.30 p.m.
- May 23.—Rand Selection Corporation, Ltd.—Twenty seventh Ordinary General Meeting, at 3.30 p.m.
- May 23.—New Era Consolidated, Ltd.—Seventh Ordinary General Meeting, at 1.30 p.m.
- May 27.—New Primrose G.M. Co., Ltd.—Annual Ordinary General Meeting, at 12 o'clock.
- May 27.—New State Areas, Ltd.—Second Ordinary General Meeting, at 12.30 p.m.
- May 27.—New Unified Main Reef G.M. Co., Ltd.—Twenty-first Ordinary General Meeting, at 12.15 p.m.
- May 27.—Ginsberg G.M. Co., Ltd.—Twenty fourth Ordinary General Meeting, at 11.30 a.m.
- May 27.—Glencairn Main Reef G.M. Co., Ltd.—Twenty sixth Ordinary General Meeting, at 11.15 a.m.
- May 28.—Consolidated Langlaagte Mines, Ltd.—Sixteenth Ordinary General Meeting, at 10.40 a.m.
- May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.—Ninth Ordinary General Meeting, at 3.30 p.m.
- May 28.—Langlaagte Estate and G.M. Co., Ltd.—Twenty-eighth Ordinary General Meeting, at 12 o'clock.
- May 28.—Randfontein Estates G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 2.45 p.m.
- May 28.—Van Ryn Deep, Ltd.—Fourteenth Ordinary General Meeting, at 3.10 p.m.
- May 28.—Witwatersrand G.M. Co., Ltd.—Annual Ordinary General Meeting, at 11.30 a.m.
- May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.
- June 18.—Crown Mines, Ltd.—25th ordinary general meeting, 11 a.m.
- June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
- June 19.—Durban Roodepoort Deep, Ltd., at 12 noon.
- June 20.—City Deep, Ltd., at 12 noon.
- June 20.—Robinson G.M. Co., Ltd.—Twenty-ninth Ordinary General Meeting, at 2.30 p.m.
- June 21.—Village Deep, Ltd., at 2.30 p.m.
- June 21.—Geldenhuys Deep.—Twenty-fourth Ordinary General Meeting, at 11 a.m.

ANSWERS TO CORRESPONDENTS

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

- “Scott” (Wynberg).—(1) Yes. (2) No. (3) Speculative. (4) Speculative.
- “Storekeeper.”—(1) A promising speculation. (2) No. (3) No. (4) Improving. (5) There is no public market for the shares.
- “Zincon.”—(1) An insufficient number of stope faces in ore of good value, due to defects in the lay-out of the mine. (2) Yes, eventually. (3) We do not care to advise without knowledge of your holding and other factors which are best known to yourself, but the principle is sound. (4) There should be ability to pay 7½ per cent., but we anticipate that the dividend will be passed.

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The Week's Meetings.

MODDER DEEP.

Mr. H. Newhouse, the chairman of the company, presided at the annual meeting of the shareholders in the Modderfontein Deep Levels, Ltd., on April the 16th. Among those present were Messrs. H. C. Boyd, V. J. Ronketti, W. C. Webber, W. Ross, W. S. Saunders, W. R. Crowhurst, A. Holland, A. E. Winder, and S. B. Asher. In moving the adoption of the report of the directors and the accounts, Mr. Newhouse said:—

The reports for the past year of the directors, consulting engineer and general manager will have confirmed to you what the monthly and quarterly reports issued during the course of the year indicated, namely, that last year was again one of progress. The only unfavourable feature was an increase in costs of 1s. 2d. per ton milled, due chiefly to the further rise in the price of mining supplies and the higher wages paid to the white employees. This, however, was more than balanced by an increase in the yield to 40s. 11d. and an increase in the tonnage by 11,700 tons to 505,100, the effect of the two being an increase in the working profit by £32,685 to £593,851. I would call your attention to the high efficiency of the mill, which crashed an average of no less than 23.7 tons per stamp per day and ran 98 per cent. of the maximum time. I venture to think this is typical of the work on the mine. Adding interest to the sum of £593,851 and deducting taxation, charges, donations, etc., the amount available for distribution enabled dividends totalling 19s. 6d. per share or £187,500 to be paid, the carry forward being increased by £31,201 to £157,676. For reasons given in the annual report, no provision in respect of the Transvaal Provincial Profits Tax is made in the accounts before you. As you no doubt have seen, the Supreme Court has decided against

the mining companies, but the matter is not yet at an end as it will be carried to the Court of Appeal. The liability in the case of the Modderfontein Deep Levels is £21,680, which, of course, is more than covered by the increase in the carry forward just referred to. Before leaving the accounts, I would point out that, as foreshadowed last year, there was no charge to capital account during 1918, all expenditure including additions to machinery and plant as well as buildings having been charged to working costs.

The quarterly report which has just been issued details the results for the first three months of this year. These you will note show no variation in character from those obtained in 1918, except that the working costs at 17s. 5.8d. are 2.1d. less than those for the last quarter of 1918. The development work done during the year totalled 5,425 feet, which was somewhat less than the 1917 total, the deficiency being due to the necessity for economy in explosives during the early part of the year and the comparative shortage of native labour in the last quarter. The footage was, however, more than sufficient to maintain the ore reserves, which at the end of the year totalled 3,450,000 tons with a value of 8.8 dwts. over a stoping width of 78 inches. This compares with 3,320,000 tons a year previously, when the stoping width was the same but the value a trifle less at 8.7 dwts.

Reducing Stores.

The policy indicated in the directors' report of reducing the quantity of stores carried is being continued. The reduction is not taking place quite so rapidly as was hoped for, but comparing March 31 with October 31, the decrease in value amounts to £21,000. Except dur-

ing the period when recruiting operations were disorganised owing to the Spanish influenza epidemic, the native labour available was sufficient for all requirements, your mine continuing to be a popular one with the natives. Health conditions have been as satisfactory as in previous years, though the death-rate from sickness is, of course, not comparable owing to the influenza epidemic. The nil death-rate from accidents achieved in 1917 was not maintained, but the rate was well below the average of these fields—only two deaths being due to this cause, equal to 0.9 per thousand. The insurance against interruptions of hauling, in the shape of the dump of ore on the surface, has been practically maintained, only 474 tons having been drawn from this stock during the year, leaving the quantity available at 39,395 tons from stopes and 146,000 tons from development. During the war, 68 in all of your company's white employees enlisted for active service, this total being equivalent to about 27 per cent. of the average number employed. Of these, four have made the great sacrifice and four have received wounds. It is the intention of the Board to commemorate the gallant service of these men by means of a simple though permanent memorial on the mine. The payment of allowances to those who were still serving during last year and to their dependents was continued throughout the year. In conclusion, let me voice your board's, and I am sure also your appreciation, of the excellent services rendered to the mine by the consulting engineer and Mr. Overbeck, his locum tenens during his absence, Mr. Hill, the manager, as well as by the staff and employees. You, naturally, realise that the low level of costs is indicative of a high standard of efficiency.

Mr. Saunders seconded, and the motion was carried unanimously.

Messrs. Ronketti and Boyd were re-elected directors, and the auditors were reappointed.

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THE
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NOTICE.—The postage of this issue of the *S. A. Mining and Engineering Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

Labour Day and the Mines.

Despite the dignified protest of the Chamber of Mines, representing the mining companies, and the compromise offered later, the miners of the Rand on Thursday allowed themselves to be jockeyed by some of their leaders into making a Labour holiday. A big proportion of the men, it is only fair to say, were dead against the idea from its inception, but it is a truism of labour politics that the tail can always, when it wishes, wag the dog. The effect of the virtual "pulling out" of so many men, against their better judgment, cannot fail to be detrimental to the cause the leaders profess to have at heart, because it illustrates only too clearly to what lengths of unreason even the best of them will go to demonstrate their authority. Another lesson of the affair is that the mandate of the leaders is limited to a very large extent, as witness the refusal of several of the unions of better-class men, such as the engine-drivers, to take part in the one-day stoppage of work; and yet another lesson is the ability of the mines to "carry on" with native labour and a very attenuated white complement, as exemplified at some properties in the "outside" districts. On the whole, the events of last Thursday must have given all thoughtful workmen considerable food for cogitation.

* * * *

Imperial Stock Exchange Restrictions.

Another determined effort, we are glad to hear, is to be made to move the Imperial Treasury to relax the restrictions on free Stock Exchange dealings between South Africa and England. The whole tenour of public policy is towards encouraging that freedom of enterprise which is essential to enable the Empire to bear the enormous financial burdens entailed by the war. Public bodies on this side, such as the Chamber of Mines, the Chamber of Commerce, and the Stock Exchange Committee, are doubtless alive to the necessity for hastening action in the matter, and in view of the more sympathetic attitude lately adopted by the Imperial Treasury towards new capital issues, their efforts can hardly fail to be crowned with success.

* * * *

Theron Diamonds.

Theron Diamonds, which came into some prominence during the week, is a syndicate registered just a year ago to work a prospect, with option to purchase, on the farm Wyandsfontein in the Winburg district of the O.F.S. The directors are Messrs. H. de v. Steytler, Julius Jeppe and W. J. Gau. The nominal capital is £30,000 in £1 shares. The vendors take £14,000 and working capital to the extent of £14,835 has been subscribed. The balance of share capital is held in reserve. The activity in the shares doubtless presages some good news from the property.

* * * *

The South-East Rand: An Ambitious Proposal.

Although no official confirmation of the project is obtainable it is understood that there is a proposal to amalgamate certain mining propositions in the South-East Rand area—i.e., the district lying immediately to the south and south-east of Boksburg. So far this portion of the Witwatersrand has proved most disappointing, although some millions of pounds have been expended in an endeavour to prove its payability. In some quarters it is believed that certain companies in this area did not operate along the correct line of reef, and it is suggested that more diamond drilling might throw valuable light on the geological features of the South-East Rand. We understand that it is proposed to float a company embracing something like ten thousand claims in this region when times are propitious. We hope to have something more to say regarding this interesting subject in the near future. The proposal coupled with the discovery of rich sections in an overlying reef series in this part of the Rand no doubt accounts for the recent activity in the shares of companies which possess claims in the South-East Rand area.

Transvaal Aero Union.

Little time has been lost by the Executive of the recently-formed Transvaal Aero Union in getting to work on the spade work of the organisation. The intention, we gather, is to confine membership to a number of "fellows," including firms and companies interested in the commercial side of aviation, leaving to the existing clubs the more popular aspects of the movement. As the subject touches life at a multiplicity of points, such as science, commerce, transport, etc., the work of the Union will be divided up into sub-sections, each under its own convener, which will specialize in the different departments. Government recognition will doubtless be forthcoming, and the practical sympathy of the Minister of Posts and Telegraphs is already assured. As the work of organisation proceeds, the vast extent of the field opening out before it becomes every day more apparent; and the need for the existence of a body to control and co-ordinate the various flying activities, actual and potential, becomes more insistent. We hope, at an early date, to be able to print in detail a review of the progress made, and in the meantime congratulate all concerned on the evidences before us of the breadth and depth of the foundations now being laid.

* * * *

Exchange Rates.

The burden of increasing exchange rates is being felt by the whole community. For instance, the attention of the Johannesburg Chamber of Commerce Committee has been drawn to the high exchange rates existing between this country and the East. It is stated that when remitting money at the present time to East Africa the rate is approximately 13 per cent., and to India it is even higher. It is pointed out that the imports into British South Africa from India amounted to a total of £3,400,000 during last year, and that an average exchange of 14½ per cent. has been charged on this. The banks, we understand, are investigating the matter, and their report will be awaited with interest.

* * * *

South-West Diamonds.

As foreshadowed in recent issues of this journal, important developments have taken place in the affairs of the South-West Diamond Company in connection with the acquisition of diamond-bearing areas on the mainland, and it is understood that other business is under consideration. The Consolidated Gold Fields has taken over the agency and technical control of the concern. As to the recent acquisitions of the company, seven areas are in the Pomona district and one near Luderitzbucht, to the north-west of Kolmanskop, altogether approximately 5,000 acres. The vendors are the Luderitzbucht Bergbau Gesellschaft mit Beschränkter Haftung, generally known as the L.B.G. Company. Underneath the sand on one area, Levinstal, in the Pomona neighbourhood, a conglomerate of lime and fine sand has been exposed. This has a hard surface, but becomes softer and more friable beneath. The test of this conglomerate has yielded 66 carats per 100 loads. The conglomerate, from its appearance, is the hardened ocean bed, and investigation by experts indicates that it contains larger gems than those found in the sand. The diamonds recovered are described by the experts as clear white and white with a yellow tinge, and it is understood that the company expect a very good price for their produce. The original purpose of the company to dredge the ocean bed in the neighbourhood of Possession Island, for which the Union Government has given a concession, will require the erection of a landing stage on the main land. Extra plant for the exploitation of all the areas, which were proved by the German Company and opened up in some cases, is now on order. In the meantime active development will proceed. It is understood that the enquiry by the Public Accounts Committee at Capetown into the Government lease has now concluded in a manner satisfactory to the company.

Aid for Gold Mining.

In the House of Commons this week, Sir R. Newton Moore (Coalitionist member for Islington North) asked: "In view of the drop in gold production in the British Empire and the world compared with 1915 and the probability of a further material decline in production in the future and the expansion of credit owing to the war, will the Chancellor of the Exchequer reconsider the conclusions of Lord Inchcape's Committee, and, in view of the danger of a further severe fall in gold production in the Empire, will he consider the desirability of giving every encouragement to the gold mining industry in the Empire to increase the output?" Mr. A. Chamberlain replied: "There is nothing in the report of the Inchcape Committee to suggest that producers of gold are not entitled to obtain for their produce the best price available in the most favourable market. I am now considering how this can be secured, having regard to the rise in the American exchange since the Committee reported." Mr. Chamberlain's change of attitude and his abandonment of the standpoint of the Inchcape Report must be construed as a triumph for those of us who have been striving for some direct assistance to the gold mining industry. It may be remembered that a valued contributor to our columns, in a notable series of articles that attracted wide attention some time ago, made light work of the Inchcape arguments, and the fact that the Imperial Government is now coming to view the question in a more sympathetic light must be credited to the persistent efforts of our contributor and those of us who supported his campaign. Strange signs and portents are visible in the world of public finance to-day. The Imperial Government has actually stopped the export of gold from the United Kingdom altogether, and there are other evidences that unorthodox economic opinion was not too far from the truth after all. We take to ourselves some small share of the credit for bringing these things to pass, and refusing to be overawed by the hide-bound conservatism of the text-book doctrinaires on the complexities of the currency question.

* * * *

Modder Deep and Geduld Enemy Shares.

As we go to press we have received official notification that the Modder Deep has purchased from the Custodian 70,000 enemy shares at £6 12s. 6d. per share, and the Geduld 250,000 enemy shares at 40s. per share. The full circular explaining how these shares are to be dealt with will appear in our next issue.

* * * *

Eldorado Banket Mine Shutting Down.

The output of the Eldorado Banket Gold Mining Company for February was £12,475 from 5,084 tons crushed, with an estimated profit of £5,222. According to latest information the mine is likely to cease operations this week.

* * * *

Consolidated Mines Selection.

The Consolidated Mines Selection Co., Ltd., maintains its dividend for 1918 at the increased rate inaugurated in 1917, namely, 3s. per 10s. share. At the same time £20,000 is again placed to reserve, raising that fund to the very satisfactory total of £100,000. Shareholders are, of course, entitled to the dividend on the "enemy shares," for which they recently subscribed, as well as on their original holding.

* * * *

"Coldfields" Changes.

From March 1 last, Mr. J. T. Bedborough, of the agency department, Consolidated Gold Fields of South Africa, Ltd., became a member of certain of the London committees, such as those of Simmer and Jack, Robinson Deep, Knights Deep, etc. From that date, Mr. E. Ashmead received the appointment of London secretary of these companies. Mr. Ashmead is the son of the late Mr. Edward Ashmead, one of the leading mining accountants of his day. The board of the Consolidated Gold Fields of South Africa announce that Mr. Herbert Cecil Porter, for many years the secretary of the company, has been elected a director, and that Messrs. Harry George Sidgreaves and John Bradshaw have been appointed acting joint secretaries.

Closer Working of Scientific and Technical Societies.

The movement to effect the closer working of scientific and technical societies in South Africa was taken a further step forward at a joint meeting of representatives of the councils on the 24th April. It was then decided to press forward with schemes for the joint housing of these societies in Johannesburg, and to submit a paper, prepared by Mr. Percy Cazalet, embodying the necessary resolutions on the subject to the several societies concerned.

* * * *

V.F.P. Engineers Visit the Falls.

Mr. Bernard Price and Mr. T. G. Otley, of the Victoria Falls Power Co., Ltd., leave this week for Rhodesia, doubtless to inspect what have been aptly termed the "liquid assets" of the company, which unfortunately still remain unutilized. We should not be surprised if as a result of their visit something were done to harness the Falls to supply power to the big metallurgical projects mooted in connection with the base metal deposits of Charterland.

* * * *

Springs Enemy Holdings.

In our recent article explaining the position of Springs, it was incorrectly stated that the company had purchased the enemy shares in the hands of the Custodian. The fact is that the number of enemy shareholdings in the company is so small that the Custodian considered it unnecessary to dispose of them. The same applies to Brakpan, the only companies of the group that have found it desirable to transfer the enemy interests being the Rand Selection, New Era and the "C.M.S."

* * * *

Mr. Christopherson to Visit England.

Mr. D. Christopherson, the manager of the Consolidated Gold Fields, is leaving this week on a well-deserved holiday in England. Mr. Christopherson, it will be remembered, was recently decorated by the King for his outstanding services to the Governor-General's Fund. Mr. J. G. McDonald, of the Gold Fields Rhodesian Co., Ltd., and Mr. Parsons, the consulting engineer to the company, have been visiting the Rand this week in connection with business matters.

* * * *

Union Corporation Meetings.

The meetings of the subsidiary companies of the Union Corporation group were held last week, and reports of those omitted from our last issue will be found in another part of this. Mr. H. Newhouse presided at the meetings, and his speeches to the Modder Deep and Geduld shareholders will be found of particular interest, since they review in detail the past year's performance and future prospects of these important properties. Rand chairmen's speeches nowadays are models of concentrated information, with never a word of unnecessary discursiveness, and Mr. Newhouse's discourses are admirable of their kind. To summarize them would be to omit something; we can only print them in full.

* * * *

Mr. H. Newhouse.

At the monthly meeting of the "Safety First" Committee of the Rand Mutual on Tuesday a very hearty vote of thanks was passed to Mr. H. Newhouse who, owing to his departure on a well-earned holiday, vacated the chair in favour of Mr. John Munro. Since its inception some five and a half years ago, Mr. Newhouse has occupied the chair of the Prevention of Accidents Committee and has thrown into the work an amount of enthusiasm and energy that have contributed very largely to its success. In Mr. John Munro, who has always shown great interest in its work, the Committee will find a worthy successor. Mr. Newhouse leaves to-day for England on a six months' holiday, and his place will be filled temporarily by Mr. P. M. Anderson.

TOPICS OF THE WEEK.

A SOUTH AFRICAN MINT.

THE Government has announced its intention of establishing a Mint in South Africa, and there seems to be a disposition in all quarters to give the project a hearty welcome. It may be remembered by pioneers that the banks in this country opposed the idea when first mooted by President Kruger, and that Sir Lewis Mitchell especially distinguished himself by demonstrating the shortcomings of the original scheme under the conditions then prevailing in South Africa. The mint afterwards established at Pretoria never quite became a success, largely doubtless by reason of its distance from the goldfields. Profiting by that experience, the Government will now no doubt decide upon a Reef centre—preferably Johannesburg—for the site of the Mint; and with the examples of Canada, Australia and India to guide it, there seems little possibility of failure. Apart from Senator Munnik, who has done so much to keep the question before Parliament, credit for forcing the idea before the industry and the Government must be given to Mr. Samuel Evans. It is an open secret that Mr. Evans prepared for the Chamber of Mines an elaborate report on the whole question, which brought together all the available figures, gleaned from other parts of the British Empire. The arguments for establishing a Mint, referred to by Senator Munnik in his speech on the subject, were, we believe, substantially the same as those advanced by Mr. Evans. First, he emphasised the amount which was lost by importing silver currency last year. It appears that we obtained £400,000 worth of silver coins from India which we might have struck off ourselves. Second, as regards the gold mines, 22 out of 52 producing mines are making crushing profits of 25s. or less per ton; about a dozen stand in imminent danger of having to close down. The cause of their difficulties is mainly the reduced buying power of the sovereign, as compared with pre-war days. The mines exist by selling their gold; consequently whatever enhances the value of the sovereign improves to that extent their balance sheet. To-day their realisation costs, according to a figure supplied by Mr. Samuel Evans, amount to 1s. 2½d. per ounce, a sum which includes exchange, freight and Bank of England charges. This represents an amount of about £552,000 subtracted from the profits of the mines. Much the biggest part of the expense of that ounce could be saved if the gold coming out of the reef could be minted on the spot and then made marketable in the form of pounds sterling within the country. During the war period the charges were considerably higher, aggregating a loss of £962,000 a year. It appears that the gold mines of the Transvaal, had the country possessed its own Mint from the establishment of the Union, would have saved to date over £5,800,000! If correct, these figures afford eloquent support for the project, and the wonder is that they were not brought forward long ago. The economics of the question, indeed, appear to have been a little hazy until subjected to the critical survey of Mr. Evans. Now with the powerful backing of public sentiment, and the clearly demonstrated interest of the industry, the Government should have no difficulty in hurrying through Mr. Malan's promised Bill. That any Bill at all is necessary is questioned by the *Cape Times*, which says: "All that is needed for the establishment of a Mint in South Africa is the Parliamentary authorisation of the necessary expenditure. The sum required, if the experience of Canada may be taken as a guide, is much smaller than one might imagine. When the submarine campaign rendered it inadvisable to send South African gold to England, a large quantity of bullion was dispatched to Canada to be minted. Thus we have the curious position that, owing to the necessity of minting South African gold in large quantities in war time, the Canadian refinery has been enlarged to a capacity enormously in excess of the Canadian gold output; while the Union of South Africa, with a gold output some ten or eleven times as great as that of the Canadian Dominion, has no Mint at all." The omission, we sincerely trust, will be rectified before the end of the present session of the Union Parliament.

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MODDERFONTEIN AND MALANSKRAAL.

Prospecting Along the Western Portion of the Balfour Syncline—Old Time Shafts and Present Day Trenches—The Modderfontein Van Ryn (South) Company—Geological Features of the Area—What Boreholes have Disclosed—The Kimberly Series on Malanskraal—Correlations with Wilgepoort—A Large Area of Considerable Potential Value.

In the articles which have appeared in previous issues of this journal on the Greater Heidelberg Gold Fields, only meagre references were made to the farms Modderfontein 56 and Malanskraal 73, both of which properties are situated on the southern rim of the Balfour synclinal area and along the line of formation upon which the Far East Rand (South) Gold Mines are exploiting a most promising reef section on the farm Wilgepoort 244 immediately to the south of Balfour. Modderfontein and Malanskraal lie to the west of the farm Tweefontein, which was prospected by Messrs. A. Goerz & Co. some years ago, and in view of the interest which this outlying section of the Witwatersrand basin is engaging at present it has been deemed necessary to give some further consideration to the geological features to be observed on Modderfontein and Malanskraal and to record the work carried out thereon in order to complete our survey of the Greater Heidelberg Gold Fields and our examination of the prospects which this area holds out for the proving of an extension of the profitable and active portions of the Witwatersrand.

THE MODDERFONTEIN (SOUTH) COMPANY.

Through the courtesy of the directors of Modderfontein Van Ryn (South) Gold Mining Co., Ltd., our special commissioner was enabled to visit these two farms a few days ago, and the results of his observations and investigations are recorded hereunder. Travelling south-east from Heidelberg one follows the road to Villiersdorp in the Free State—which place, by the way, will, so it is understood, be shortly connected with the rising township of Balfour by railway. This road crosses Houtpoort and thereafter traverses Lagerspoort, on which latter farm there are evidences of large earth movements which have resulted in the detachment of the Balfour Gold Fields from the conglomerate areas more closely associated with Heidelberg and the Nigel. On Modderfontein a rough road forks off almost due south to the eastern portion of that farm on which the Modderfontein Van Ryn (South) G.M. Co., Ltd., is engaged in prospecting operations. This company was registered in Capetown on the 10th August, 1918, with a capital of £75,000, and was formed, *inter alia*, to purchase from the vendors mineral contracts over portions of the farms Modderfontein No. 56, Lagerspoort No. 210, Malanskraal No. 73, and Driefontein No. 280, situate in the Heidelberg district. The contracts are for periods renewable for three years at moderate rentals and carry the right to purchase the mineral rights of each property. The purchase price of the full mineral rights of all the farms, in extent 6,517 morgen, or 14,337 acres, is £113,400. Mr. W. E. Bleloch was engaged to report on the Modderfontein, Van Ryn (South) G.M. Company's properties, and in his report, he stated "that the Malanskraal-Wilgepoort syncline is almost an exact replica of the Far East Rand, and that on Modderfontein, Malanskraal, the line of outcrop and sub-outcrop of the Van Ryn Reef extends for six miles." Mr. M. E. Frames, F.G.S., Am.I.M.E., in a subsequent report, also stated that the Van Ryn Reef outcrops on Malanskraal and Modderfontein.

PROPERTIES WITH A "PAST."

As in the case of most other properties in the Greater Heidelberg areas the Modderfontein-Malanskraal line cannot be regarded as virgin soil or as a *terra incognita* from the geological point of view. There are, however, reasons for believing that the work of past years did not tend to place a correct assessment of value upon these propositions. Previously to the present renewal of interest, and activity

in this district the most recent work on the Modderfontein-Malanskraal line was conducted by the Coronation Syndicate and the Diadem and New Colonies Syndicates, and when the Coronation bubble burst in respect of the main asset of that ill-fated concern on Edenkop, the whole of the Southern rim of the Balfour synclinal area fell into ill repute, *ipso facto*. So great was the reaction after the collapse of Coronations with their short-lived prosperity that had Modderfontein 56 been that greater Modderfontein which to-day contains the most important gold mines of the world, it might well have received an almost staggering death-blow and the new era of activity which has been opened up for this line by recent developments and particularly the development on Wilgepoort should not therefore be prejudiced by the unhappy recollections of fourteen years ago. It is, however, of interest to note the following which appeared in the *Mining Journal* in 1904:

STRIKE ON MALANSKRAAL.

"The intersection of a most promising looking reef series by the drill on the portion of Malanskraal being exploited by the New Colonies and Diadem Syndicates is another very substantial link in the chain of evidence going to prove that Heidelberg has more valuable mining areas than most engineers would admit. At the shallow depth the same reefs apparently that were located on Daspoort have been found, and if the values are satisfactory the developments will lead to greater activity in the vicinity. The formation was regular maintaining an average depth of 35 degrees. The following was the section intersected:—From the surface down to 60 ft. sandstones were encountered, and from that point to 139 ft. well-defined quartzites; at 139 ft. a small leader 2 ins. wide, with pebbly quartzite, which is highly mineralised, then 12 ins. of reef. This is again followed by about 3 ft. of quartzites, when another reef about 12 ins. is met with. Some portion of this latter is highly mineralised. The next reef matter is between 203 and 220 ft. There two leaders were noted, separated with about 3 ins. of highly pyritic quartzites. All the experts who have examined the core were impressed with this section, most of them expressing an opinion that it should show excellent value. From 274 ft. to 275 ft. small leaders appear, and from 275 to 295 ft. interbedded layers of reef matter and quartzites appear, one body as much as 147 ins. being all reef matter, some portion of it being good looking and fairly mineralised. We understand that 165 ins. divided into twelve sections have been sent for assay from this section. From 295 ft. to 321 ft. quartzites, with occasional pebbles appear where the drill entered the underlying shale bed. It is notified by the Diadem and New Colonies Syndicates that Mr. D. J. Williams' advice was taken throughout, not only in the selection of the ground, but in the location of the drill, Mr. E. H. A. Cohen being in consultation with him in the latter instance."

"The results obtained on Modderfontein 56 under the superintendence of Mr. Graham have evidently fired a train of enthusiasm and option-seeking on this section of the Heidelberg goldfields. All or a portion of Koppiesfontein No. 304 has been purchased outright, and a portion of Sterkfontein 204 has also been acquired, whilst Platkoppies is involved too. The prospecting operations being carried on by Mr. Graham, and the work done by Mr. Minett Frames on Rietspruit should throw much-needed light on the Heidelberg maze. The Daspoort borings and Rietfontein No. 241 workings, also have given results which minimise the failures of Messrs. Lewis & Marks to locate with

boreholes a reef series evidencing payable assays. Boring is also proceeding on Grootvlei, a farm situated considerably to the south-west of the Edenkop portion."

WHAT BOREHOLES DISCLOSED.

Boreholes put down on Modderfontein and Malanskraal in each case cut reefs and leaders of low values. The old main shaft on Modderfontein sunk 150 feet on a reef dipping at about 11 degrees to the north disclosed values of 6 dwts. over 30 inches, and the No. 2 shaft situated 200 feet from the main shaft cut five leaders carrying low values. Of the old No. 4 shaft near the fence on the same property no particulars are available. A great portion of Modderfontein is covered by Karoo measures, in which workable seams of coal have been located, but this formation obscures the basal granite and its overlying quartzites and contorted slate beds which form such a valuable marker on the Wilgepoort line further to the east. The probable continuation of these beds westwards under the coal measures can, however, hardly be disputed and the Modderfontein-Malanskraal line possesses a valuable factor of correlation in the prominent development of the Kimberley slates and bankets, particularly in the vicinity of the Malanskraal Homestead, where an incline shaft was sunk long ago on one of the lower reefs of the series. The existence of an overlying banket series correlated with the Chimes Reef and also of a reef which appears to have a stratigraphical horizon closely corresponding to that of the reef in proximity to the Nigel Battery are other geological features which have supported correlation with the Wilgepoort section to the east, and therefore with the profitable conglomerates of the legitimate Witwatersrand. The initial prospecting work being carried out on Modderfontein at present has more or less followed the line on which shafts were sunk some years ago, and in the western workings on this horizon a reef

has been exposed which yields a high-grade panning of coarse gold. Judging, however, from the stratigraphical features to be observed in settled country on Wilgepoort, it seems doubtful if the same reefs that have been exposed on that farm have as yet been opened up by the Modderfontein Van Ryn South. There are, however, certain analogous features or stratigraphical characteristics common to both Wilgepoort and the Modderfontein-Malanskraal line (particularly in regard to the existence of a bastard footwall containing sparse pebbles and sandstone impregnated with a low gold content) which suggest that the two undertakings are operating along a precisely identical horizon although the more important commercial strata have not yet been exposed in their normal development on the more western areas. The present workings on Modderfontein show that in the 60 ft. shaft close to the fence on the eastern side of the farm a pebble bed varying from 10 in. to 2 ft. 6 in. in thickness panning but poorly in gold. The middle workings appear to be located on the line of the bastard reef, but the values in the western section appear to average not less than 6 dwts. over a comparatively small thickness of reef. A considerable amount of trenching work is in progress, and this if continued across the formation and also in depth, will very probably result in discoveries of a highly important nature. We regard the Modderfontein-Malanskraal section as the western extension of the highly encouraging Wilgepoort area to which extended reference was made in these columns a week or two ago and shall await the results of further prospecting operations with the greatest interest.

Colonel S. A. M. Pritchard C.M.G., has arrived back on the Rand from France to resume his duties as Director of Native Labour. It is understood that his return was expedited at the request of the Prime Minister.

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THE NATIVE HOSPITAL AT THE CITY DEEP.

A Practical Demonstration of the Care of the Mine Native in Sickness as in Health—Question of Female Native Nurses—The Economic Value of the Conservation of the Native Worker.

THE care with which the health of the native worker on the Rand is conserved finds eloquent and practical illustration in the excellent hospitals for the treatment of mine "boys" now to be found at several places on the Reef. That at the Crown Mines is, perhaps, the largest in point of actual number of beds, but that at the City Deep, though smaller, is quite the last word in modern hospital comfort and accommodation. It was our privilege, recently, to be shown over the latter by the courteous surgeons, Dr. Stevenson and Colonel Macaulay, and Matron-in-charge, Miss McGillivray, and the mere layman is struck everywhere throughout the institution with the evidence of a wise and generous liberality in planning, organising and equipping entirely for native use this most modern and complete establishment. Before describing the hospital, it may be of interest to recall the gradual process that has gone on of educating our mine administrators up to the proper appreciation of the economic as well as the humanitarian value of conserving the health of the native worker on the mines. Those of us who remember the conditions on the Reef fifteen or twenty years ago will readily recall the primitive nature of the surroundings in white as well as in native hospitals. Even up to a little while ago native wards, particularly, were nothing to be proud of, and made a dismal and dingy picture compared with what to-day can show. Beginning after the Boer War, our mine medical men, foremost among whom were Drs. Macaulay and Irvine, started a campaign of enlightenment that, wisely enough as it proved, began with those at the top. Among the first, also, of our mine administrators to waken to the economic value of attention to health questions was Mr. Samuel Evans, and largely through his efforts and influence, the Corner House group of mines has always led the van in this excellent movement. Through his instrumentality, Colonel Gorgas was commissioned to report on health conditions on the mines, and the appointment of his able lieutenant at Panama, Colonel Orenstein, as Chief Medical Officer to the Central Mining—Rand Mines Group was a direct consequence that has in its turn been fruitful of further excellent results. To Colonel Orenstein, for instance, we believe we are safe in attributing the conception of the City Deep native hospital, which, like that of the Crown Mines, is a pattern and model of its kind for the whole Reef.

THE HOSPITAL DESCRIBED.

The City Deep native hospital serves the great mine on which it is situated as well as the Nourse Mines, and special cases from adjacent mines on the East, of the Rand Mines group. It is built in the well-known pavilion style in three communicating double-ward pavilions running out from a cross-connecting pavilion, capable of further extension. In the top pavilion are situated an emergency operating theatre, the matron's office, main operating theatre, storeroom, offices and lecture room. The two operating theatres are fitted with all the latest devices to supplement the surgeon's skill, and, to the uninitiated at least, seem to embody every known aid to the alleviation of human pain and suffering. Cleanliness and brightness are the keynotes everywhere, and the whole layout of the building is designed to minimize distance and effort in transporting the patients from ward to operating theatre and back again. The actual wards are fitted with all the care and completeness that mark the best and largest of our local white hospitals, and have given the institution on Hospital Hill its high place and reputation among the general hospitals of the British Empire. The different types and degrees of illness and surgical cases are carefully segregated in different wards, and when the present 152 beds are found inadequate, there remains ample space for the uniform extension of the building by the addition of extra wards. Close at hand are the modern quarters,

beautifully finished and furnished, for the resident doctor, the matron and nurses, and nearby are the separate quarters for the native female nurses, who merit a whole paragraph to themselves.

THE NATIVE NURSES.

Still, perhaps, largely in the experimental stage generally, native female nurses at the City Deep Hospital may be said to have already proved themselves an unqualified success. About a dozen are in residence, drawn from the best class of native, and if appearance goes for anything, they seem admirable in demeanour and in the keenness they evince for their work. White sisters, of course, superintend each ward, but to the native nurses is relegated, and apparently with most satisfactory results, all the work usually performed by probationers and white nurses. The native nurses are excellently housed, under European conditions; and one cannot refrain from regarding the whole scheme as one calculated to produce far-reaching results on the future of the native races in this country. The future mothers of the black races cannot be brought into contact with trained nurses of their own tribe and colour without the effect being for the general good.

THE MORAL OF IT ALL.

The effect of the treatment accorded to him at the City Deep Hospital, moreover, cannot fail to make for good on the native worker. He sees all around him the evidences of that same loving-kindness which the white race is ever wont to lavish upon the sick and injured of its own colour. He is coaxed back to health amid surroundings that cannot fail to sooth the most savage breast. And he is sent away a new man physically, with gratitude in his heart, and showing in his eyes, inarticulate though he often be to express in thanks his real feelings. To the mines, of course, there is compensation, in the fact that in such an environment, with the best surgical, medical and nursing skill procurable, the native worker is returned whole and fit to his work in the shortest possible time, and with the minimum of damage to his efficiency. But when all is said, the guiding policy and spirit behind this care and treatment of the sick and maimed native is something more than economic, certainly not wholly mercenary. Who will say that it is not amongst the noblest monuments to humanity in this much-derided centre of industrialism? that it is not "the fine flower and blossom" of the practical application in this uncongenial soil of the Sermon on the Mount?

ANSWERS TO CORRESPONDENTS

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"F. B. I." (Capetown).—The shares should certainly appreciate in value with the general progress of the country.

"Widow."—The shares of both banks are attractive investments.

"Kim."—(1) Yes. (2) It is too soon to say that the dividend may be passed. (3) 20 per cent.

"W. J. B."—An attractive speculation, but nothing more.

"Ernest."—We would advise them to leave well done.

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THE LESSER ORE CONCENTRATOR.

A New Invention for the Recovery of Gold, Diamonds and Base Metals—Adaptability to Low Grade Products—Experiments with Sands and Slimes—The Concentrator Described—Tests with Big Models—Large Size Machines now under Construction for the Rand.

A COMPANY has recently been formed in Pretoria under the title of the Lesser Ore Reduction Company, with a nominal capital of £5,500, to exploit certain patents invented by Mr. C. Kunst. The inventions in question are: 2 improved concentrators, 1 improved speed alarm apparatus, 1 improved corundum mill, 1 improved eccentric, 1 improved crushing roller mill.

THE WORKING MODELS.

The two improved concentrators referred to in the foregoing have been constructed on large size models, one being a dry and the other a wet concentrator. The latter machine was seen in operation last week by a representative of this paper, who was much impressed with the efficiency of the machine. The concentrator was tested on gold concentrates mixed with very fine sand, and also with sands and very fine slimes, containing a fractional tin content, from the Roelberg Tin Mine, and in each instance a satisfactory concentrate was obtained.

THE MACHINE DESCRIBED.

The concentrator is constructed to extract by specific gravity gold, tin and other base metals out of sand and slimes, and its description is as follows: The concentrator is mounted on top of a reservoir with two compartments, one for sands and the other for concentrates, both provided with discharge valves. The concentrator consists of a square frame made of angle iron with a pair of 4-inch diameter rollers 20 inches long mounted 26 inches apart and parallel to each other, this roller frame is held in suspension under water by 4 flat steel springs in an inclined position bolted to a framework on top of the reservoir. The roller frame is connected to an eccentric having 1½-inch stroke and 160 revolutions per minute, giving the frame a back and forward movement in the direction the endless belt travels. Over the two rollers travels an endless canvas belt upwards, on an incline of 30 degrees, at the slow speed of 30 inches per minute. The unsized pulp to be treated is fed 3 inches below water level from time to time across the moving belt by an automatic feeder, which discharges every 9 seconds the quantity of pulp to be treated within such time. The back and forward movement of the roller frame with its belt under water level causes the water to play in waves on the shaking slow upwards moving belt, thereby concentrating the unsized pulp by specific gravity, the residue is shaken downwards over the lower roller, dropping into the larger compartment, whereas the concentrates, settling on the belt, are taken upwards over the top roller, where they are washed clean of the belt by the splashing water and settling down into the smaller compartment of the reservoir. No slimes can stick to the belt, which so often becomes a nuisance to concentration, and by the belt travelling under water level, the question about having too much or not enough water running down a concentrating table falls away. Classification of the unsized pulp to be treated is not essential with this new concentrator, because the largest grains of sand are not forced by a stream of running water from the belt, but are removed through the waves of the water playing on the inclined shaking belt below water level. The waves of the water, fast or slow, can be regulated with the revolutions of the eccentric shaft. The concentrating belt can be set to any required inclination. The capacity of this concentrator, being of the smallest size, is 3 tons of pulp sand per day, the larger size, which is now under construction, has a capacity of 20 tons per day, the power for the larger concentrator required will not exceed ½ horse-power. The inventor claims that with the installation of this new concentrator on the Witwatersrand mines, by treating the unsized pulp direct from the tube mills, the present cyanide plants will be reduced by fully 90 per cent. and the amalgam plates done away with.

THE SCOPE OF THE INVENTION.

Two or three large size machines are now being constructed by a local foundry, and in these the endless canvas belt will be 10 feet 6 inches broad by 5 feet 6 inches long, as compared with a 5 feet 6 inches breadth of belt in the working model. The capacity of these machines will be close on a ton per hour, and it is understood that when they are completed they will be installed on the Rand with a view to treating the tailings of one or two defunct mines. We think the Lesser Ore Concentrator will prove an efficient machine for the separation of gold and base metals from its containing sands or slimes, or sands and slimes mixed in low grade tailings, not only in this country but in other parts of the world as well. The machine, when fitted with riffles to the travelling belt, should also prove useful in the concentration of low grade auriferous alluvials carrying coarse gold.

PERSONAL.

Mr. H. Newhouse leaves on a business visit to England this week.

* * * *

Mr. D. Christopherson leaves on a business visit to England this week.

* * * *

The resignation of Mr. E. R. Ross, general manager of the Rhodesian Railways, takes effect from next month.

* * * *

Mr. Percy Sherwell, manager of the City Deep, goes on a well-deserved holiday in a few days.

* * * *

Lt.-Col. Colin Clark, R.E., of the S.A.R. engineering staff, has returned from special service with the Admiralty.

* * * *

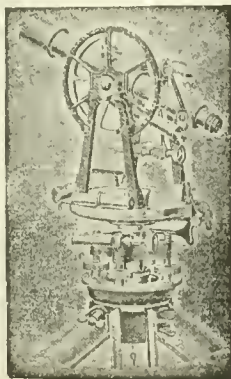
Capt. Graham, R.E., son of Mr. W. T. Graham, has returned to the Rand.

* * * *

Mr. N. O. Curry, of Messrs. Sykes & Co., Ltd., has returned from a business trip to England.

* * * *

Mr. T. G. McLelland, managing director of the Makganyene Diamond Syndicate, is on a visit to Johannesburg.



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THE NATIVE LABOUR POSITION ON THE RAND.

The Year Reviewed—The Colour Bar and Native Unrest.

QUITE the best and most authoritative review of the native labour position during the year is contained in the speech from the chair of the Witwatersrand Native Labour Association, delivered by Sir Evelyn Wallers this week. In the course of his address Sir Evelyn said that in 1915 the number of East Coast natives coming forward to the mines reached high-water mark at 56,560, of whom 47,985 were recruited and 8,575 voluntary natives. In 1916 the total was 55,418, in 1917 51,378, and in 1918 47,370. The figures for 1918 were not really comparable, owing to the cessation of recruiting during a portion of November and the whole of December on account of the influenza epidemic. Similarly during 1917 (and a portion of 1918) operations were affected by the recruiting of carriers for military service in East Africa by the Portuguese authorities. It was, however, the opinion of the officials that the number of adult male natives available for recruitment in the districts open to the Association had recently sensibly decreased through several causes, but principally the influenza epidemic. The number of deaths from the disease amongst natives in Portuguese territory had unfortunately been considerable. Consequently, until the younger generation had grown up, they must assume a somewhat diminished number of potential recruits for the mining industry. Further, and for the same reasons, there must be for some time a falling off in the average physique. In July and August, 1918, your Association took steps to open up the only remaining area in Portuguese territory south Latitude 22 degrees S. which had not already been tapped. Although the number of natives obtainable from this previously almost unexplored district was not great, and the recruiting cost necessarily higher per capita than in the more thickly populated coast districts, arrangements had been made by the establishment of chains of W.N.L.A. stations to give the same facilities to the natives in that area to proceed to the Rand as were given to the natives in other parts of the province. Steps had been taken to put a stop to the clandestine recruiting of Portuguese natives by recruiters in the North-Eastern Transvaal, which had recently assumed serious proportions.

INFLUENZA EPIDEMIC.

The disabilities in recruiting East Coast natives and more particularly the influenza epidemic applied also to the British South Africa native labour supply during the latter part of the year. The total number of British South African recruits obtained by members during 1918 through their recruiting organisation—chiefly the Native Recruiting Corporation—amounted to 62,658 as compared with 76,215 in 1917. The total number of voluntary natives engaged (*i.e.*, natives coming up on travelling passes from their homes) slightly increased during the year. The number of British South African volunteers was 55,140 in 1918 as compared with 53,978 in 1917, and the East Coast volunteers 9,871 as compared with 9,895 in 1917. At the end of the year under review the members of the Association employed only 62.17 per cent. of their complement, as compared with 73.57 per cent. at the end of 1917, 83.02 per cent. at the end of 1916, and 93.71 per cent. at the end of 1915. This continual shortage in the native labour supply was, of course, a chronic complaint. Only once within recent years had they had sufficient labour for requirements, in 1915, when,

owing to the war, the diamond mines and various other industries temporarily ceased operations. With the growth of local industries all over the country there appeared no prospect whatever of the British South African native labour supply increasing to an extent which would provide a sufficient supply of native labour for all industries. Unless the country were to accept the position that its industries were to be permanently stunted through shortage of native labour, the importation of tropical natives must be resorted to. The opinion was strongly held that Dr. Lister's anti-pneumonic vaccine would eliminate the previous excessive mortality amongst such natives when employed on the Rand, and this opinion had received additional support by the excellent results obtained in the United States army from the use of similar vaccine.

NATIVE UNREST.

The native unrest which had exhibited itself on the Rand on several occasions during the year under review, was due to a variety of causes, once grievance being, to Sir Evelyn's mind, an unanswerable one—the impossibility under present conditions of the native advancing in earnings beyond a very limited point, no matter what his skill or ability might be. As regards the conditions generally of natives on the mines, the report of the late Mr. J. B. Moffat, who investigated the causes of native unrest on the Rand in August of last year, was conclusive evidence of the unsatisfactory nature of these conditions. The death rate from disease amongst natives employed by members was the highest since 1913, amounting to 21.04 per thousand per annum, as compared with 10.75 in 1917. The influenza epidemic accounted for approximately 9.70 per thousand per annum of the 1918 death rate. The Board was confident that the progressive reduction in the death rate which had been a feature of the last few years would continue, more especially when the systematic inoculation of all natives with Dr. Lister's pneumococcal vaccine had been effected. The position of natives employed on collieries had been before the Board on several occasions during the year, and it might be said with justice that many of the steps taken in recent years to improve the position of natives on the collieries had been due to your Association. The natives on the collieries, as on the gold mines, looked to the Association for protection and for the remedying of their grievances. On several occasions the whole of the natives employed on individual collieries ceased work in a body and marched to the Association's compound to lay their grievances before the Association. In some instances the complaints had some foundation and they were remedied, but the Association had strongly impressed upon natives that on no account must they cease work in such a manner, but that if they had any grievances to lay before the Association they must appoint two or three delegates to do so. It must not be thought, however, that the native conditions on collieries were unsatisfactory.

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TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Crushing and Profit & Loss Returns for Six Months—An Interesting Table—Compiled from Chamber of Mines' Statements.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax. Miners' Pensions Contributions, etc.

AURORA WEST

Capital: £106,353 (10s. shares).

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	12,700	14,043 21 2	23 4	*932 1 6
November	11,800	12,621 21 5	24 9	*2,092 3 7
December	10,700	10,789 20 0	25 6	*2,934 5 6
1919.				
January	12,000	10,985 18 1	23 8	*3,287 5 6
February	11,700	11,885 20 4	25 5	*2,994 5 1
March	15,000	15,504 20 8	21 5	*470 0 7

* Loss.

BANTJES CONSOLIDATED.

Capital: £502,306.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	18,150	23,617 26 0	23 2	2,129 2 4
November	21,000	25,724 24 6	17 4	6,992 6 8
December	7,130	12,909 35 2	18 10	5,844 16 5
1919.				
January	3,050	4,409 28 11	21 11	1,004 6 7
February	—	4,447 —	—	—
March	—	4,600 —	—	—

BRAKPAN MINES.

Capital: £850,000; issued £791,100.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	49,000	81,748 33 3	26 5	17,724 7 3
November	45,000	80,507 35 9	26 4	21,052 9 4
December	44,000	85,052 38 7	26 2	26,440 12 0
1919.				
January	42,000	86,241 41 0	25 11	30,874 14 8
February	41,300	81,850 39 7	25 1	29,176 14 2
March	51,500	95,103 36 10	24 7	30,724 11 11

CITY DEEP.

Capital: £1,250,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	49,500	92,159 37 3	28 2	20,566 8 4
November	46,500	88,731 38 2	30 6	15,893 6 10
December	45,000	91,127 40 6	29 7	22,728 10 1
1919.				
January	45,500	91,415 40 2	28 11	24,887 10 11
February	40,000	78,825 39 5	30 5	17,510 8 9
March	50,000	100,034 40 0	27 9	29,368 11 9

CITY AND SUBURBAN.

Capital: £1,360,000 (£4 shares).

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	19,053	30,974 32 6	32 0	*163 0 2
November	16,490	33,413 40 2	37 10	1,115 1 9
December	15,945	31,624 39 8	39 2	*234 0 4
1919.				
January	15,579	28,765 36 11	39 9	*2,793 3 7
February	13,947	24,437 34 9	40 10	*4,368 6 3
March	16,159	25,474 29 1	38 2	*3,758 7 2

* Loss.

CONSOLIDATED LANGLAAGTE.

Capital: £950,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	40,000	50,301 25 0	20 3	9,886 4 11
November	36,600	47,906 26 1	21 4	8,848 4 10
December	37,400	47,587 24 6	20 9	8,835 4 9
1919.				
January	41,300	51,644 25 0	20 9	8,859 4 3
February	41,000	49,414 23 11	19 9	8,870 4 4
March	47,200	56,074 23 7	19 2	10,848 4 7

CONSOLIDATED MAIN REEF.

Capital: £1,247,602.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	46,310	69,799 29 4	25 11	8,183 3 6
November	41,700	62,985 30 3	28 1	3,026 1 5
December	43,420	65,436 30 2	27 5	4,833 2 3
1919.				
January	44,310	68,367 30 10	27 7	6,551 2 11
February	41,610	67,199 31 10	28 9	6,417 3 1
March	50,140	74,803 29 10	26 0	8,636 3 5

CROWN MINES.

Capital: £940,106 (10s. shares).

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	147,000	206,788 28 0	23 3	31,183 4 3
November	134,000	188,620 28 1	25 3	15,537 2 4
December	132,000	195,379 29 5	25 11	21,596 3 3
1919.				
January	140,900	205,110 29 4	26 4	18,380 2 7
February	124,000	183,948 29 6	27 5	12,970 2 1
March	160,000	222,861 27 9	24 3	25,468 3 2

DURBAN ROODEPOORT DEEP.

Capital: £140,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	25,690	38,518 30 1	27 9	2,191 1 9
November	25,300	38,399 30 4	28 2	2,002 1 7
December	26,200	38,969 29 5	26 9	3,065 2 4
1919.				
January	23,200	34,908 30 1	30 3	*531 0 5
February	25,000	37,563 30 1	28 4	1,831 1 6
March	27,700	40,795 29 5	27 2	2,698 1 11

* Loss.

EAST RAND PROPRIETARY MINES.

Capital: £2,445,897.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	113,000	131,769 23 4	21 0	11,080 2 0
November	112,000	142,630 25 5	22 10	12,054 2 2
December	115,000	137,792 24 0	21 5	11,802 2 1
1919.				
January	115,000	146,424 25 3	23 0	12,606 2 2
February	103,500	134,458 26 0	21 0	8,734 1 8
March	112,000	150,004 26 9	25 1	8,030 1 5

FERREIRA DEEP.

Capital: £980,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	38,700	59,965 31 0	24 2	11,975 6 2
November	33,950	59,252 34 11	26 9	12,592 7 5
December	35,500	57,259 32 3	24 11	11,848 6 8
1919.				
January	37,240	62,021 32 4	24 10	13,639 7 4
February	31,700	49,690 30 8	26 7	6,962 4 5
March	37,000	60,505 31 6	25 7	10,289 5 7

GEDULD PROPRIETARY.

Capital: £970,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	41,500	61,647 29 9	20 11	18,082 8 9
November	41,000	60,794 29 8	20 3	19,152 9 1
December	42,500	62,471 29 5	19 9	20,235 9 6
1919.				
January	42,900	63,402 29 7	20 0	20,364 9 6
February	39,500	60,046 30 5	19 10	19,456 9 10
March	43,500	63,554 29 3	19 2	20,363 9 4

GELDENHUIS DEEP.

Capital: £585,753.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	48,100	57,833 24 1	22 11	1,419 0 7
November	45,300	54,978 24 3	24 2	*1,002 0 5
December	47,000	55,679 23 8	23 9	*1,348 0 7
1919.				
January	47,400	55,968 23 7	24 0	*949 0 5
February	42,500	50,514 23 5	26 1	*5,189 2 7
March	53,100	61,341 23 1	22 3	1,651 0 7

* Loss.

GOVERNMENT AREAS (MODDER).

Capital: £1,400,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	114,500	200,183 35 0	20 2	81,744 11 10
November	100,000	187,274 36 11	21 6	79,648 15 11
December	93,000	171,838 36 6	21 11	69,600 15 0
1919.				
January	106,500	188,344 35 4	21 5	74,431 11 9
February	101,000	179,658 35 7	21 9	69,594 13 9
March	111,000	199,546 34 5	24 0	79,659 14 0

GLYNN'S LYDENBURG.

Capital: £170,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
October	2,604	5,331 40 11	32 0	1,056 8 1
November	540	1,096 —	—	*1,330 —
December	1,318	2,239 34 0	14 2	*726 11 0
1919.				
January	2,784	4,126 29 8	—	20 0 2
February	3,160	6,168 39 0	28 7	546 9 7
March	3,770	5,841 31 0	26 1	751 — 0

* Loss.

JUPITER.									
Capital : £1,014,200.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	21,900	26,990	24 8	25 5	*1,391	1 3			
November	20,600	24,841	24 0	25 1	*1,466	1 5			
December	23,200	28,961	25 0	22 11	1,913	1 8			
1919.									
January	26,400	27,908	21 2	21 1	*330	0 3			
February	22,100	24,310	22 0	23 3	*1,702	1 6			
March	24,400	26,761	21 11	23 1	*1,774	1 5			

* Loss.

KNIGHT CENTRAL.									
Capital : £900,000.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	23,750	29,921	25 2	23 0	2,014	1 8			
November	20,500	27,122	26 6	25 2	778	0 9			
December	17,350	27,355	30 1	29 2	1,480	1 9			
1919.									
January	17,900	27,377	30 7	29 5	996	1 1			
February	20,000	28,957	26 8	27 8	*429	0 5			
March	19,100	25,639	26 10	29 2	*2,195	2 7			

* Loss.

KNIGHTS DEEP.									
Capital : £743,526.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	75,500	63,487	16 10	18 10	*7,489	2 0			
November	75,900	65,572	17 3	18 5	*5,512	1 5			
December	78,000	61,324	15 9	17 6	*7,941	2 0			
1919.									
January	85,300	70,262	16 6	16 7	*464	0 1			
February	77,600	68,312	17 7	17 8	1,014	0 3			
March	88,200	76,175	17 3	16 11	608	0 2			

* Loss.

(d) In addition, £1,448 taken from reserve.

LANGLAAGTE ESTATE.									
Capital : £886,500.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	46,940	59,519	25 3	19 2	14,421	6 2			
November	44,260	56,291	25 5	19 4	13,519	6 1			
December	44,190	54,783	24 9	18 10	13,113	5 11			
1919.									
January	45,170	55,654	24 3	18 10	13,051	5 9			
February	38,160	48,917	25 8	20 1	10,506	5 6			
March	42,000	55,131	26 3	20 6	12,005	5 9			

* Loss.

LUIPAARDSVLEI ESTATE.									
Capital : £472,012.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	19,440	19,336	19 11	22 0	*2,421	2 6			
November	18,690	18,962	20 3	21 8	*1,695	1 10			
December	19,350	20,122	20 8	21 6	*1,051	1 1			
1919.									
January	19,560	21,391	21 10	22 6	*888	0 11			
February	18,860	20,950	22 3	22 2	*230	0 3			
March	21,000	20,687	19 8	21 6	*2,207	2 1			

* Loss.

MEYER AND CHARLTON.									
Capital : £200,000.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	12,141	40,698	67 0	27 1	23,645	38 11			
November	13,000	40,298	62 0	24 5	23,832	36 8			
December	13,635	39,763	58 0	23 0	23,518	34 6			
1919.									
January	12,750	39,178	61 11	25 8	22,545	35 4			
February	11,625	33,986	58 6	24 11	19,045	32 9			
March	14,000	39,368	56 3	23 3	22,508	32 9			

* Loss.

MODDER "B."									
Capital : £700,000.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	56,500	116,621	41 3	19 11	57,827	20 6			
November	56,300	109,455	38 6	19 8	51,244	18 2			
December	57,000	113,423	39 7	20 6	52,703	18 6			
1919.									
January	58,000	127,755	44 1	21 7	65,026	22 5			
February	48,000	115,691	48 2	22 11	60,342	25 2			
March	51,000	124,085	46 0	22 6	63,024	23 4			

* Loss.

MODDER DEEP.									
Capital : £500,000.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	42,100	86,960	41 4	17 5	49,997	23 9			
November	41,000	84,092	41 0	17 8	47,580	23 3			
December	40,900	84,577	41 0	18 0	47,515	23 3			
1919.									
January	41,400	88,888	40 0	16 11	51,013	23 0			
February	39,700	83,128	41 11	10 0	47,148	23 9			
March	42,800	89,100	41 8	17 7	51,151	23 11			

* Loss.

NEW GÖCH.									
Capital : £550,000.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	16,050	14,005	17 3	19 2	*1,375	1 9			
November	15,200	13,147	16 10	19 8	*990	1 4			
December	15,150	13,045	17 0	18 2	*501	0 8			
1919.									
January	14,300	13,491	17 10	19 3	*98	0 2			
February	12,550	12,684	19 11	21 0	*513	0 10			
March	15,500	14,200	17 6	19 0	*641	1 0			

* Loss.

NEW HERIOT.									
Capital : £115,000.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	11,800	16,371	27 9	27 6	*181	0 4			
November	11,200	15,632	27 11	28 2	*480	0 10			
December	11,100	16,439	29 6	27 8	791	1 5			
1919.									
January	11,900	15,067	25 4	26 14	*1,128	1 11			
February	10,100	14,153	28 0	28 8	*495	1 0			
March	11,190	16,813	30 1	27 7	1,167	2 1			

* Loss.

NEW KLEINFONTEIN.									
Capital : £1,300,000.									
1918.	Tons.	Revenue.		Cost.		Profit.			
		£	s. d.	s. d.	£	s. d.			
October	52,820	73,193	27 9	27 1	62	—			
November	46,440	62,217	26 9	27 4	*2,633	1 2			
December	47,200	57,569	23 8	25 2	*3,287	1 5			
1919.									
January	45,740	57,769	25 3	27 7	*6,145	2 8			
February	53,500	64,120	24 0	23 4	712	0 3			
March	66,000	77,920	23 7	23 1	598	0 2			

* Loss.

NEW MODDERFONTEIN.							
Capital : £1,400,000 (£4 shares).							
		Revenue.		Cost.	Profit.		
	Tons.	£	s. d.	s. d.	£	s. d.	
1918.							
October	73,000	167,909	46 0	20 3	90,485	24 9	
November	73,000	167,650	45 11	20 3	90,318	24 9	
December	70,000	159,370	45 6	20 3	85,062	24 4	
1919.							
January	76,000	170,181	44 9	20 3	91,274	24 0	
February	78,000	168,843	43 3	19 1	93,173	23 11	
March	88,000	185,677	42 2	20 1	95,168	21 11	

ROBINSON.

Capital: £2,750,000 (£5 shares).

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	36,800	40,128	21 10	20 8	1,329	0 9	
November	35,000	42,749	24 5	21 7	4,012	2 4	
December	36,100	44,248	24 6	21 6	4,467	2 6	
1919.							
January	38,500	45,442	23 7	21 0	1,779	2 6	
February	35,800	41,857	23 5	20 11	4,135	2 4	
March	40,000	43,709	21 10	20 0	3,259	1 8	

ROBINSON DEEP.

Capital: 681,807 "B" shares, £1 each, and 500,000 "A" shares, 1s. each.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	40,200	52,735	26 3	28 9	*5,967	3 0	
November	40,500	54,694	26 11	28 0	*3,139	1 7	
December	39,400	54,749	27 9	28 0	*1,450	0 9	
1919.							
January	35,200	51,075	29 0	31 8	*5,351	3 0	
February	36,000	49,834	27 8	28 1	*1,313	0 9	
March	44,200	59,693	27 0	25 2	3,250	1 6	

* Loss.

ROODEPOORT UNITED.

Capital: £460,000.

	Tons.	Revenue.		Cost.		Loss.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	21,900	19,421	17 5	24 4	7,241	6 7	
November	24,000	22,275	18 6	22 2	3,867	3 3	
December	24,000	22,589	17 11	21 1	2,460	2 1	
1919.							
January	24,000	23,736	19 4	20 8	*966	9 10	
February	23,309	22,797	19 1	20 7	*1,049	0 11	
March	25,100	22,088	17 5	20 0	*2,962	2 4	

* Loss.

ROSE DEEP.

Capital: £700,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	49,300	55,072	22 4	19 8	5,374	2 2	
November	46,400	53,823	23 2	19 10	6,779	2 11	
December	44,200	51,487	23 3	20 2	5,663	2 7	
1919.							
January	48,000	54,940	22 10	19 6	7,846	3 3	
February	47,500	55,751	23 6	19 7	8,519	3 7	
March	54,000	60,505	22 5	18 7	9,570	3 7	

SIMMER AND JACK.

Capital: £3,000,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	49,900	56,299	22 7	20 9	3,542	1 5	
November	48,900	55,985	22 11	20 8	4,497	1 10	
December	45,700	54,554	21 7	20 6	5,803	2 6	
1919.							
January	44,100	49,057	22 3	21 2	2,504	1 2	
February	37,100	42,643	23 0	22 6	2,365	1 3	
March	44,700	48,059	21 6	22 2	*868	0 5	

(d) In addition, £4,035 taken from reserve.

(e) In addition, £2,124 taken from reserve.

SIMMER DEEP.

Capital: £1,650,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	44,500	46,334	20 10	21 9	*2,869	1 3	
November	42,400	40,460	19 0	22 9	*8,529	4 0	
December	43,100	48,420	22 6	21 8	911	0 5	
1919.							
January	43,300	48,135	22 3	22 5	*947	0 5	
February	37,900	42,622	22 6	23 10	3,109	1 8	
March	40,600	41,645	20 6	24 2	*7,903	3 11	

* Loss.

SUB NIGEL.

Capital: £775,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	9,950	24,191	48 8	32 7	7,517	15 1	
November	9,100	26,349	57 11	38 2	8,466	18 7	
December	9,700	25,746	53 1	36 6	7,569	15 7	
1919.							
January	9,100	26,149	57 6	41 2	7,105	15 7	
February	8,500	24,399	56 6	37 10	7,956	18 9	
March	9,100	23,643	50 4	40 1	5,828	12 5	

SPRINGS MINES.

Capital: Authorised. £1,500,000; registered. £1,300,000; issued. £1,153,500.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	35,450	73,383	41 5	23 11	31,748	17 11	
November	32,000	72,343	44 6	24 6	32,446	20 3	
December	28,800	68,108	47 4	25 9	30,200	21 0	
1919.							
January	33,350	72,450	43 5	25 3	30,287	18 2	
February	35,300	68,022	38 6	21 3	25,271	14 4	
March	37,350	71,625	38 4	25 2	23,729	12 8	

TRANSVAAL G.M. ESTATES.

Capital: £604,225.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	13,630	25,482	31 10	25 8	8,107	12 4	
November	475	3,075	—	—	*5,212	—	
December	3,550	1,915	27 8	61 1	*6,508	36 8	
1919.							
January	11,380	14,455	25 5	29 9	*2,780	4 11	
February	12,850	18,771	29 3	26 9	1,167	1 10	
March	15,910	25,588	32 2	24 9	5,310	6 8	

* Loss.

VAN RVN.

Capital: £500,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	33,860	36,153	21 4	17 7	6,147	3 8	
November	32,000	33,816	20 11	17 7	5,541	3 6	
December	32,300	32,550	19 10	17 6	4,063	2 6	
1919.							
January	32,600	32,011	19 6	16 11	4,133	2 6	
February	31,100	31,599	20 4	17 6	4,140	2 8	
March	34,000	33,689	19 5	17 0	4,507	2 8	

VAN RYN DEEP.

Capital: £1,196,892.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	47,750	98,505	11 3	20 7	49,361	20 8	
November	42,350	94,932	14 10	21 6	49,469	23 4	
December	40,800	94,359	16 3	23 2	47,145	23 1	
1919.							
January	42,900	95,748	11 8	22 8	47,179	22 0	
February	43,350	94,992	11 5	21 11	47,536	21 11	
March	50,000	105,632	12 0	20 10	53,456	21 5	

VILLAGE DEEP.

Capital: £1,060,671.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	40,900	58,037	28 5	28 1	*671	0 4	
November	38,200	53,050	27 9	30 11	*7,164	3 9	
December	46,800	65,139	27 7	24 2	6,919	2 11	
1919.							
January	48,200	65,856	27 4	25 5	4,262	1 9	
February	45,800	59,629	26 9	24 7	2,580	1 2	
March	54,000	69,166	25 7	24 6	2,089	0 9	

* Loss.

VILLAGE MAIN REEF.

Capital: £472,000.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	21,300	28,804	27 1	21 9	4,995	4 8	
November	19,800	26,548	26 10	22 2	4,029	4 1	
December	17,600	25,877	29 4	25 10	2,508	2 10	
1919.							
January	18,200	25,729	28 2	25 11	2,434	2 9	
February	17,000	21,795	25 8	23 11	1,188	1 5	
March	18,700	24,471	25 8	23 8	1,960	2 1	

WEST RAND CONSOLIDATED.

Capital: £2,004,424.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
October	27,150	31,225	22 9	24 7	*2,252	1 8	
November	25,000	26,994	21 6	25 9	*5,162	4 2	
December	28,400	32,117	22 6	23 6	*1,395	1 0	
1919.							
January	30,500	36,259	23 8	22 11	1,159	0 9	
February	28,600	33,362	23 2	23 1	111	0 1	
March	32,800	37,886	23 1	22 2	1,295	0 9	

* Loss.

WITWATERSRAND.

Capital: £475,000; issued. £469,625.

	Tons.	Revenue.		Cost.		Profit.
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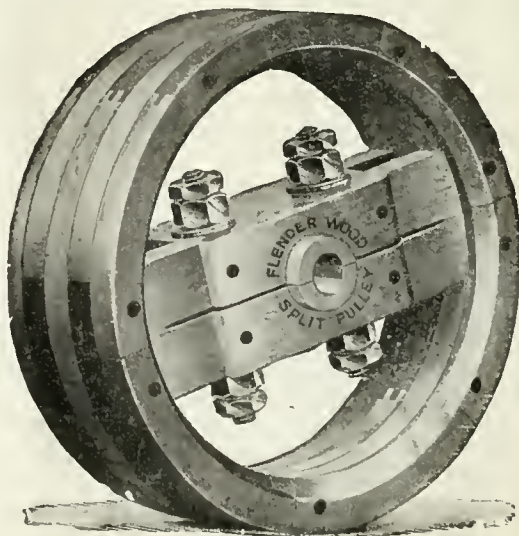
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THE WEEK IN THE SHAREMARKET.

A Weak Market—Limited Business—"T.C.L." Activity.

The settlement of the strike had no effect on the market, as it had evidently been discounted, the net result at the close being an advance in Springs to 16s. 3d. and a reduction in Modder Easts to 20s. 3d.—20s. 6d. A sale of Rand Selections was put through at 76s. At the opening on Monday Springs were in demand, sales being booked from 46s. to 47s. 6d. Crown Diamonds were done at 23s. The call was dull with no transactions of any importance. The leading stocks came the turn lower, with the exception of the three big Modders. At the close prices were firm, with sales of African Farms at 14s.; Modder Deeps at £7 12s. 6d.; Springs at 47s. 3d.; and Sub Nigels at 21s. 3d. Hume Pipes went weak at 31s. 6d., and Modder Easts at 21s. 1½d. were also lower. On Tuesday morning prices were naturally affected and business restricted by the May Day tomfoolery. One feels how utterly inadequate is the language permitted to the Press in view of the rank imbecility and selfishness of wishing to fine the mining industry £50,000 for the sake of listening to bellowing Socialistic piffle in some public place. At the opening Crown Diamonds were sold at 22s. and Modder Easts at 20s. At the call, for some unknown reason, Consolidated Lands were bid up to 26s. 3d., a rise of 2s. 9d. Springs held their recent gains, but the general tone was easier. Crown Diamonds had a further setback during the course of the day, which brought them down to 21s. 3d. Consolidated Lands advanced to 27s. buyers. Hume Pipes dropped to 29s. The only business done at the opening on Wednesday was a sale of Crown Diamonds at 21s. 10½d. and another of Springs at 47s. Transactions were limited on the call and mostly in small stocks. Prices were lower all round, and the general tone may be gauged by the fact that when an offer of 90s. was made for 100 Government Areas to arrive there was a perfect volley of acceptances. The next sale went through at 89s. 6d. After the call prices were again lower, with sales of Crown Diamonds at 21s. 6d., Government Areas at 89s., and Springs at 46s. 9d. The total business at the call on Thursday consisted of sales in ten stocks. Springs and Van Ryn Deeps were a trifle harder, but Government Areas went below the previous day's closing figure, the first sale being 88s., when, after a deal at 88s. 6d., they finished 88s. 3d. sales and buyer. In the outside stocks during the week a good deal of business was done in the new venture, Theron Diamonds, which adjoins Monteleo. The sales ranged between 13s. and 21s. Makganyenes have been neglected, the only sale recorded being at 48s. 9d. for an odd lot. The present figure is 47s. 6d. seller. South-Westerns were active at about 80s., at which they stand with sales and buyers. Koodoos are shelved, at any rate for the time being, only an odd lot changing hands at 22s. Union Tins were sold at 5s. 3d.; Phoenix at 1s.; New Farms at 1s. 7½d.; Sakalavas at 9s. and 8s. 3d.; Monteleos at 12s. 6d. to 11s. 6d.

The market continues in a depressed condition as the alterations in price at the call on Friday fully show. Sales: East Rand, 5s. 9d.; Ginsberg, 1s. 3d.; Kleinfonteins, 11s.; Princess, 2s. 3d.; West Springs, 21s. 6d.; Options, 7s. 9d.; Wit. Deeps, 15s. Buyers and sellers: African Farms, 13s. 6d., seller; Brakpan, 64s., seller; Bush Tin, 1s. 7d.—1s. 8d.; City Deep, 52s., seller; Clydesdale, 24s., buyer; Leeuwpoot, 22s. 6d.—23s.; Meyer and Charlton, 85s. 6d.—87s. 6d.; Modder Easts, 19s. 6d.—19s. 8d.; New Unifieds, 4s., buyer; S.A. Breweries, 33s., buyer; S.A. Alkalis, 21s. 3d., seller.

	Fri. 25th.	Sat. 25th.	Mon. 26th.	Tues. 27th.	Wed. 30th.	Thurs. 1st.
African Farms	14 0+	13 6*	13 6*	13 6*	14 0+	13 3*
Anglo-Americans	21 9*	21 0*	21 6*	25 0+	25 0+	—
Apex Mines	7 3*	7 3*	7 3*	7 3	7 3	7 6+
Bantjes	2 2	2 1*	2 1*	1 1*	2 2	2 2*
Brakpan Mines	64 0*	65 6+	—	63 6	66 6+	—
Breyten Collieries	11 0*	12 0+	—	—	12 0+	12 0+
Brick and Potteries	4 6*	4 6*	4 6*	5 0+	—	—
British South Africa	—	20 0+	—	—	—	—
Bushveld Tins	1 9	1 9	1 8	1 7*	1 7*	1 8*
Cassell Coals	22 6*	22 6*	22 6*	—	22 6*	22 6*

	Fri. 25th.	Sat. 25th.	Mon. 26th.	Tues. 27th.	Wed. 30th.	Thurs. 1st.
Cinderella Cons.	—	—	3 3*	—	3 3*	3 3*
City and Suburbans	—	5 9*	—	6 0	6 0	5 9*
City Deeps	51 6*	53 0+	—	53 0+	53 0+	53 0+
Clydesdale Collieries	23 6*	—	—	—	23 6*	23 6
Cons. Investment	—	—	25 0*	25 0*	25 6*	—
Cons. Langlaagtes	17 0*	17 0*	17 6*	17 6	17 3*	17 3*
Cons. Main Reefs	10 0	9 6*	9 9*	9 9*	10 0+	—
Cons. Mines Selection	—	23 6+	23 6*	23 6	—	—
Coronation Collieries	—	52 6*	52 6*	52 6	52 6	52 6*
Coronation Freeholds	1 5	1 6	1 5*	1 6	1 6	—
Crown Diamonds	22 9	23 0	23 3	22 0*	21 9*	21 9*
Daggafonteins	22 6*	22 3*	21 6*	22 0*	22 0*	22 0*
Durban Road Deeps	8 0+	—	—	—	—	—
East Rand Coals	2 4	2 4	2 4*	2 5	2 4*	2 4*
East Rand Deeps	0 10*	—	0 10*	0 10*	0 10*	0 9*
East Rand Minings	17 0*	17 0*	17 0*	17 0*	17 0*	17 0*
East Rand Props.	6 0+	5 6*	6 0	6 3*	6 0*	6 0
East Rand Debentures	—	£62*	—	£60*	£62*	£63*
Eastern Gold Mines	—	1 5*	1 4	1 3*	1 3	1 3*
Frank Smith Diamond	3 10*	3 9*	3 10*	3 9*	3 9*	3 9*
Geduld Prop.	44 9	45 3	44 10½	44 9	44 6*	41 6*
Ginsbergs	—	2 0+	2 0+	1 0*	—	1 0*
Glencairns	1 0*	1 0*	1 0*	1 0*	—	1 0*
Glyn's Lydenburgs	21 0+	21 0+	19 0*	20 0+	19 0*	20 0+
Government Areas	91 0	90 9	90 6*	90 6	89 6	88 3
Jhb. Board of Executors	30 0*	30 0*	30 0*	30 0*	30 0*	—
Jupiters	—	—	—	5 0+	—	—
Klerksdorp Props.	1 1*	1 1*	1 1*	1 1*	1 1*	1 1*
Knight Centrals	8 3	8 4*	8 3*	8 2	8 0	8 0
Knights Deeps	—	—	5 6*	5 6*	5 0*	5 0*
Lace Props.	20 0*	20 0*	20 0*	20 0*	20 6+	20 6+
Leeuwpoot Tins	23 3	23 3	23 3	23 3	22 0*	22 3
Luipaardsvlei	—	—	—	1 6*	1 0*	—
Lydenburg Farms	8 7*	8 8	8 8	8 6*	8 6	8 6*
Middelvlei Estates	1 1	1 0*	1 1*	1 0*	1 3+	1 0*
Modder B.	156 3*	158 9*	158 0*	158 0*	150 0+	162 6*
Modder Deeps	151 3	150 6*	151 0*	151 6*	—	151 0*
Modder Easts	20 4½	20 7½	20 3	19 9*	20 0	19 9
Do. Options (3 years)	3 7*	3 6*	3 6	—	—	3 3*
Do. Option (4 years)	5 0+	4 9	4 8*	4 6*	4 6	4 9*
Hume Pipes	33 6	33 6+	32 0*	30 0*	29 0*	29 6*
Natal Navigation Colls	—	22 6*	—	—	—	22 0*
National Banks	300 0*	297 6*	300 0*	300 0*	300 0*	300 0*
New Boksburgs	1 6*	2 0+	1 6*	2 0+	1 6*	1 6*
New Eland Diamonds	26 0*	27 6	27 0*	27 0*	27 0*	27 0*
New Era Cons.	10 0*	10 0	10 3+	10 2	9 9	9 9*
New Geduld Deeps	4 6*	—	4 7*	4 7*	4 6*	4 6
New Herio's	9 6*	9 6*	9 6*	—	—	9 6*
New Kleinfonteins	11 3*	11 0*	11 0*	11 6	11 0*	11 0*
New Modders	523 9*	522 6*	520 0*	530 0+	520 0	—
New Unifieds	—	3 6*	3 6*	3 6*	—	3 6
Nourse Mines	—	14 0+	14 0+	14 0+	—	13 9+
Premier Deferreds	140 0*	140 0*	140 0*	—	—	—
Premier Preferreds	140 0*	140 0*	140 0*	—	—	—
Pretoria Cements	69 0	68 6*	68 0*	68 9	67 6*	67 6
Princess Estates	2 0	—	2 0	2 1	2 2*	2 2*
Rand Collieries	—	3 3*	3 0*	3 0*	3 3*	3 3*
Rand Nucleus	2 0+	2 0+	2 0+	2 0+	2 0+	1 6*
Rand Selections	—	78 0+	77 0+	—	76 0+	—
Randfontein Deeps	4 6*	5 0+	4 9+	4 9+	5 0+	—
Randfontein Estates	15 0*	14 9*	14 10*	14 9*	15 3+	14 9*
Robert Victors	14 0*	14 0*	15 3+	15 0+	—	—
Rooibergs	6 0+	5 0*	5 3*	5 3*	5 3*	5 0*
Ryan Nigels	3 3*	3 3*	—	3 3*	3 3*	3 3*
Shebas	1 6*	1 6*	1 9*	1 9*	1 9	1 9+
Simmer Deeps	1 6*	—	1 7*	—	1 6*	1 6
S.A. Breweries	—	—	—	—	32 0*	32 0
S.A. Lands	6 1*	6 1*	6 1*	6 1*	6 1	6 0*
Springs Mines	45 9	45 0	47 4½	47 7½	46 9*	47 0
Sub Nigels	20 6	20 9	20 9*	21 0*	21 0	21 0*
Swaziland Tins	—	—	17 0*	—	20 0+	—
Transvaal Lands	22 0*	—	23 6*	26 3	26 0*	26 0
Transvaal G.M. Estates	13 6*	13 6*	—	13 6*	13 6*	13 9*
Van Ryn Deeps	68 6*	68 3	68 6*	68 0+	67 0*	68 9
Village Deeps	16 0*	17 0+	17 0+	—	15 0+	15 0+
Western Rand Estates	1 7*	1 9*	—	1 9	—	—
Witwatersrands	17 6*	17 6*	—	17 6*	—	—
Wit. Deeps	15 6*	15 6*	15 9	15 6	15 0+	15 3
Wit. Townships	27 6+	27 6+	—	27 0+	21 0+	21 0+
Wolhuters	2 9*	2 9*	3 0+	2 6*	2 6*	—
Zatilaats	10 6	10 3*	10 3*	10 6	10 3	10 3
New State Areas	23 0*	23 0	23 1½	23 0*	23 0	23 0*
Southern Van Ryns	9 0*	8 9*	8 9*	8 9*	8 5	8 3
S.A. Alkalis	26 0+	25 0+	—	—	—	—
Union Corporations	15 6*	15 6*	15 6*	15 6*	15 0	15 0*
West Springs	22 3	22 6*	22 3*	22 3	22 6*	22 3

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ECONOMIES IN HAND DRILL STEEL.

Mr. H. A. Read's Invention and Experiments—A Valuable Paper.

THE Journal of the Chemical Metallurgical and Mining Society for March, 1919, which is now to hand, contains, amongst other informative articles, a valuable paper read by Mr. H. A. Read, of the Rand Mines, entitled "Notes on Economies in Hand Drill Steel." Mr. Read, at the commencement of his year, showed that in the five years ending with 1917 the issues of steel per native had a value of £310,250, or an average of 86lb., in value 27s. 6d. per native per annum. Mr. Read continues: Consideration of the large sums involved in these issues of steel led to examination of the losses, which are hereafter referred to in detail. It appeared that one of the principal losses was due to the shanking of the steel under the blows of the hammer, and this in turn led to the conclusion that if shanking losses could be prevented by means of a permanent drill head an appreciable economy would thus be effected. After some experimenting the solution of the problem was found, as it was ascertained that by heating the end of the drill and staving it up (either by means of a die and dolly in a Leyner Press or by hand) so as to give the head of the drill a bulbous or pear shape and subsequently tempering it, the drill would be provided with a head capable of resisting hammer blows without shanking. The question will be asked why the new form of drill head stands up to the work. The explanation appears to lie in the fact that the head is so staved-up that the least possible disturbance is created in the first instance in the molecular formation of the steel. Correct draw tempering then clothes the bulbous shaped head with a fine coating of hard tempered steel—probably not much more than 1/16-in. thick, below which is a body of lower tempered steel. This body of lower tempered metal (increased as it is beyond the original section of the drill) provides a re-inforcement which prevents the disturbance and disintegration of the molecules of metal which otherwise take place under impact of the hammer. The advantages of the new form of drill head are as follows: (1) The saving of steel by preventing crushing or "mushrooming" of the shank end; (2) elimination of danger to natives, as there are no splinters or jagged ends; (3) improved drilling, as the natives have a uniform tempered surface to strike, and the energy hitherto absorbed in shanking is diverted to the work of drilling; (4) improved control of steel. The drill heads are practically permanent, and, as the starter becomes too short, the permanent heads can be welded on to other steel. There would be no excuse for these shaped drill heads to be found lying about. A mine once fully equipped should require enough steel only to make good the *bona fide* wear through drilling and sharpening; (5) the drill instead of being a ragged-ended piece of steel becomes a workmanlike tool well suited for the job which it has to perform; (6) the cost of trimming up and periodic retempering of the old form of drill by lead bath or other method (where such is the practice) is saved. Mr. Read then proceeded to detail the results of experiments carried out with this new type of drill at the East Rand Proprietary and Ferreira Deep Mines. The conclusions to be derived from these experiments, he said, may be summarised briefly as follows:—1. That the loss of steel hitherto sustained by the mines through mushrooming or crushing can be entirely prevented by the new permanent head. 2. That a simple system of steel control can be introduced which will eliminate the heavy losses of hand drill steel from causes other than fair and proper wear and tear. 3. That the consumption of hand drill steel can then be reduced to the amount of steel actually used in the processes

of drilling and sharpening. 4. That accidents and lost shifts hitherto caused by splintering of drills can be practically eliminated by the use of the permanent head. 5. That there is evidence of an appreciable improvement in efficiency when using the permanent drill head as the energy hitherto absorbed in the crushing up or mushrooming of the shank is available for drilling. 6. That the importance of the foregoing to the mining industry lies in the fact that the work of a very large body of natives (averaging 45,000 per annum) is beneficially affected. 7. That there is a field for further investigation on the following points:—(a) The relative losses of steel in different methods of sharpening and determination of which is the best method; (b) the possibility of further improving efficiency by fluting the existing stocks of drills and incidentally the maximum amount of fluting economically possible; (c) the correct weight and shape of hammer for use in hand drilling.

The President of the Society and Mr. Hildick Smith commented on the value of the invention and experiments at this meeting.

Mr. Read's invention appears to us to be most valuable, and his claims are substantiated by actual results, and if his device is not generally adopted it will be merely another indication of the innate conservatism of the industry.



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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Future of the Heidelberg Goldfields.

To the Editor, S.A. Mining and Engineering Journal.

Sir,—I have read the series of articles by your Special Commissioner *re* the Greater Heidelberg Goldfields with great interest, and I should be glad to add my tribute of thanks and appreciation. I write as a prospector and as one who tries to read the open book of Nature. Years ago I tramped the inhospitable hills of the Witwatersrand formation in the Heidelberg area, and I have recently revisited old scenes. The district abounds with interest. Nature has been kind and has given many natural sections. As the streams, in general, cut across the dip of the strata, much is revealed. This entails much scrambling up and down ravines, but the knowledge gained is more trustworthy than that gained by inspection of diagrammatic sections in the pages of a text-book. The granite, as in the Central Rand area, and as pointed out by Dr. Corstorphine, is the best *datum* line. Then comes the Witwatersrand series, and then, the despair of the prospector, the amygdaloid. Dolomitic and Karroo series may be disregarded, as they do not complicate the Heidelberg area to any great extent. In the near vicinity of Heidelberg there is system, but further down on the Natal line conditions become complex. Both strike and dip may be bewildering and the attentions of the amygdaloid embarrassing. The biscuit is broken. Witness a point to the left of the railway, when travelling eastwards, near Balfour. Your Commissioner says the field is big enough for all. This is true. Nevertheless the individual worker with pick and shovel must have pecuniary backing. The Heidelberg area, before to-day, has been dotted with claim-plates, and these were rather suggestive of graves; graves they very often proved to be of the hopes of the luckless prospector. The farmer in the Heidelberg area is usually a good prospector himself. His concern is to know whether he has got outcrop of banket upon his farm. The hungry hills and the prospect of option money have sharpened his vision. He has frequently been at the prospector's elbow. The prospector is little concerned with names, but is much concerned with things. His quest is for a gold-bearing banket. All he asks for is an outcrop; a sub-outcrop is necessarily beyond him. The Witwatersrand series is straightforward enough, when undisturbed, but the amygdaloid is quite a different pair of shoes. Quite clearly a lava, and a basic lava and, consequently, very fluid upon its extrusion, penetrating every crevice, as sill or dyke, and not scrupling to skip from one horizon to another if thereby it found an easier path. A fact which has to be borne in mind when calling in its aid as "marker." It is compressed sometimes to a great hardness. It may be as flaked as a well-rolled pie-crust, for even so trivial an affair as the preparation and baking of a good pie-crust affords useful analogies of the vicissitudes which have overtaken sedimentary deposits in the great past lapse of geological time. In article VII. your Commissioner uses the expression, *intelligent prospecting*. "Aye, there's the rub." How often has one stood beside quite ambitious

shafts put down in pitifully hopeless places, perhaps—but here the ice is slippery—at the instigation of "experts." Intelligent prospecting, by pick and by drill, will indeed, and before very long, decide the future of the Greater Heidelberg Goldfields.—Yours, etc.,

HILL-TOP.

Johannesburg,

28th April, 1919.

The Modder Compressed Air Pipe Accident.

Dr. Moir's report on three specimens of exhibits referred to in our last issue, received on 28th February, 1919, marked Modder B. Accident, is as follows:—G.L.C. 475/19: Oil taken from compressor lubricator. G.L.C. 476/19: Carbonised material taken from walls of compressor discharge valve. C. 477/19: Oil scraped from walls of compressor cylinder. C. 475/19: This is a pale thick oil; the closed flash point was 529 deg. F. C. 476/19: This resembled carbon, but its ash was high and contained much copper oxide and some zinc. On heating to 500 F. it gave off nothing inflammable, but afterwards when the lid was removed it inflamed spontaneously at about 400 F. This is evidently the cause of the fire, the finely-divided copper oxide having catalytically ignited the carbon and then the oil. C. 477/19: A water extract of this was quite acid, thus accounting for the attack on copper. Its ash which was considerable was mainly copper oxide with a little iron and zinc. It would be well to try the source of this acid, since if the metal had not been attacked, there would not have been such a lot of copper oxide as to start a fire.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

A Labour Day Holiday—Swing of Trade Pendulum—Mines Dull, Others Fair—Timber and Building Materials—Electrical Goods—Iron and Steel—Hume Pipes—Oils and Colours.

This has been a broken week, as Thursday, May 1st, was vigorously taken up as a Labour Day holiday. It would not have mattered much whether we had an extra holiday in these dull times, but as there are three public holidays this month on May 24th, 29th and 31st, the commercial community is certainly not pleased that an extra day has been thrown in at such short notice. Although the building strike was over and many employees started work on Monday, yet business was disappointing, which perhaps was only natural as the builders had to get into their stride again in ordering the various stores and equipment. But the timber and brick yards were exceptionally busy and it was pleasant to see the timber drays heavily laden about the streets again.

THE SWING OF THE TRADE PENDULUM.

On the whole, especially in the mining material line, enquiries are meagre and stocks held by merchants are heavy. Prices are receding irrespective of the cost of replacement, simply because of the building trade having been at a standstill for twelve weeks, and also the mines using so freely from their reserves and only purchasing odds and ends actually required. Business in the building line requirements will soon improve, but the overhanging clouds in Europe are darksome in the extreme, and it is problematical when Peace will be signed, and so many things are waiting for that. Another matter which is of paramount importance is the unrest amongst the natives, which, although it is being tackled wisely by the Government, still leaves an undercurrent of feeling that it is preventing anything like activity in mining and commercial circles. The gleam of sunshine, however, is in the demand for timber and materials from the railway authorities, municipalities, diamond mines, the coal fields and base metal propositions. The country trade is also quite fair, as a parcel of new crop mealies realised 13s. 10d. to 14s. 2d. per 200 lb. bag on Tuesday of this week. There is a lot of wealth in this item, that the country trade is assured. The motor car people are expecting decent consignments by any of the steamers now on the way from New York and Britain, therefore the garages are looking forward to a promising revival of business when they receive the latest oversea models to place before their clientele.

TRADE FINANCE.

Reuter's correspondent at Elisabethville, in the Belgian Congo, writes:—What cannot by any means be described as a panic, but what is certainly a grave sensation, was created here on April 22 by the announcement of the Banque de Congo Belge, that the rate of exchange had been raised since Saturday by 3 francs 50 centimes in the £ sterling. The rate had already been increased last month from 20.50 on London and 25.65 on the Union, a flat rate at which it had stood during the war, ever since the end of 1914, to 26 francs and 26.15 respectively. This was a heavy tax on local merchants, it being an increase of 2 per cent. upon their coast costs, but the new increase is a far more serious matter, as it adds a further 14 per cent. to those costs. It will be recognised where the shoe will pinch most severely when it is borne in mind that bills now maturing in the hands of banks may have been given in many instances,

for goods already sold wholesale at a rate of profit lower than 11 per cent. on costs calculated at the lower rate of exchange, and these bills will now have to be met at a price of several sovereigns in the hundred above what the goods have realised. Naturally there is a great deal of speculation as to the source of and reason for this extraordinary and sudden rise.

TIMBER AND BUILDING MATERIALS.

One merchant remarked that there were plenty of men and plenty of timber for building purposes, therefore we should have an all-round better business in about another week's time. Naturally the sawmills are very busy making up for lost time, and although business is decidedly better, yet prices if anything are even lower than last week. Deals are 1s. 6d., flooring 8d., and ceilings 6d. per ft. Galvanised roofing iron, 24 gauge, 1s. 4½d., and 26 gauge 1s. 2d. Second-hand deals are about 1s. 2d. and roofing iron also 1s. 2d., but there is very little of the best iron in the market. Country orders might well be termed excellent, but in several cases requisitions have been held up for various reasons. One explanation is that contractors outside the strike area have obtained supplies from the coast. As regards the brick kilns, quite a lot of activity as regards orders and re-arranging the old requisitions has been in progress during the past few days.

ELECTRICAL GOODS.

Generally, what with the cessation of the strike and the arrival of consignments, affairs are assuming a more cheerful aspect in the electrical goods market. There is as yet no great alteration in prices to report, but tubing still remains exceedingly scarce and fetches practically any price asked for it. Many merchants are, as a matter of fact, entirely out of this article and are looking forward eagerly to shipments on the way out from Home. Wiring, on the other hand, is becoming more plentiful and cheaper. In the opinion of one leading distributor, now that the labour diffi-

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culty has at long last been settled, we may look ahead to good and increasing business for some time to come. Orders are coming in freely, and these, together with those hung up during the recent strike, are giving merchants a busy time of it. Our informant told us that already the day after the resumption of work he had received by half-past eight in the morning more orders than he could adequately execute during that day, and he anticipated an augmentation in his business from day to day for some considerable time. The only fly in the ointment (but a very large one) militating against the resumption of erstwhile activities was the uncertainty regarding the acceptance by Germany of the Allies' Peace terms. The Germans, it must be remembered, are a stubborn race and cannot be coerced; therefore in face of the tremendous conflicting issues awaiting settlement, he thought mankind might well be congratulated if the Peace settlement were made and fixed up by the end of June.

IRON AND STEEL.

The demand for all kinds of local and imported bar iron and mild steel is excellent from the town and reef, as well as from all parts of South Africa, more particularly for the Dumswart and Vereeniging manufactures. Prices are inclined to be easier in consequence of the constant importations from Britain, Canada and America. The American importers state that a few more orders have been placed in New York, where the manufacturers are again wanting orders. The party giving this information emphasised the fact that the world would now have to look for a long time to America and Great Britain for their steel supplies. Prices for wire nails have been badly affected of late, as the superabundance of supplies is marvellous as compared with the scarcity of six months ago. The keen quotations on the Commercial Exchange are, for wire nails, 6 x 2 and 6 x 4, 40s.; 1 x 6 and 3 x 9, 50s.; 5 and 6, 45s. Drill steel is 10d. lb. and mild imported 6½d. lb.

HUME PIPES.

The Hume Pipe Company has secured a large order for the whole water supply scheme of Estcourt (Natal), consisting of 3,000 yards of 10 in. pipe per 100 lbs. working pressure. Further, an order for the whole of the first part of the sewerage and drainage scheme for Kingwilliamstown, consisting of some 10,000 feet of 12 in. pipes, and in addition they have orders for about 30,000 ft. of 12 in. low pressure pipe and over 100,000 ft. of 4 in. pipe. A 10 in. pipe an inch thick, made to conform to the Johannesburg Municipality's compression tests of 4,000 lbs. per yard, carried 7,650 lbs. per yard before cracking, and then this pipe did not give way. After the load was removed the pipe returned to its original shape within half an inch. The company have further secured some extensive orders from the Administrator of the Transvaal for large culvert pipes, and are just completing the erection of a machine which will enable them to make pipes up to 60 in. diameter and 8 ft. long.

SECOND-HAND TIMBER AND IRON.

It is gratifying to see the timber and iron yards again being overhauled by numerous buyers. Now that the strike is off and sawing has recommenced, a particularly busy time is anticipated by our timber merchants; the number of suspended orders for materials already in hand will, without taking into account current and future orders, occupy them fully for some considerable time to come. Prices as yet are not much altered, but with, if anything, a rising tendency. Good roofing deals are about 1s. 2d. for lengths 3 x 9. For iron, of which there is very little in the market, the same price obtains, but owing to its scarcity this will inevitably increase in price in the immediate future. Inquiries, on the whole, elicited the fact that business in this section is shaping very well indeed, and a good, if not rich, harvest appears to be in the offing to recoup dealers in some measure for the stagnation and losses prevailing during the past three months.

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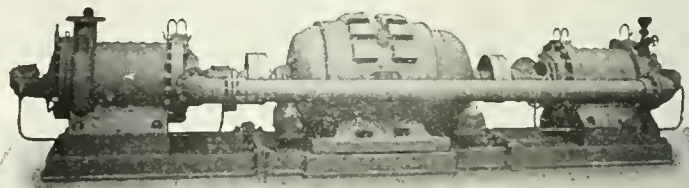
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OILS AND COLOURS.

Perhaps the best factor making for activity again is the demand from painters, as much is expected in the painting line. It would have been noticed that the roofs of Johannesburg have got into a shabby state during the war period, as this was one of the things that could be postponed. Towards this end, a large number of paints, more particularly roofing paints, have been provided, some of which have been made from certain ochres and oxides found in the Transvaal. White lead is from 75s. to 82s. 6d. per 100 lbs. and 9d. to 1s. per lb. over the counter. Linseed oil is from 10s. to 12s. a gallon, according to the brand. Turps, 65s. to 70s. a case. Putty, 7d. to 8d. per lb. Red lead, 1s. to 1s. 3d. Varnishes of good average, 25s. per gallon. It is satisfactory to report that all the local factories making paints, blackings, floor polishes, and so forth, are again in full work. There is any quantity of British and American plate glass, as well as sheet glass, and it is hoped that business will be very brisk in a short while for new buildings completing their beautiful show windows and office fronts. The oil, colour and glass trades have been subjected to much speculation by outsiders, that is, people having spare cash, rushing in where angels fear to tread, and owing to the armistice coming at least six months before the time expected, some of these speculators are sorry, as they still have big lines with an ever-drooping market.

The Lonely Mine.

The following are particulars of the gold output of the above mine for the month of March, 1919:—Mill ran 696 hours; crushed 5,000 tons; fine gold recovered, 1,986·960 ozs.; value, £8,353 16s. 2d.; slimes treated, 5,000 tons; fine gold recovered, 1,098·125 ozs.; value, £17,233 3s. 2d.; total fine gold, 6,085·085 ozs.; total value, £25,586 19s. 4d.; profit, £11,559 2s. 11d.

Rooiberg Quarterly Report.

The report of the Rooiberg directors for the quarter ended 31st March, 1919, states that:—Number of stamps, 10; days mill ran (24 hours), 52·30; ore treated (including 1,716 tons of stock slime re-treated), 6,765 short tons; concentrates produced, 110·7 long tons; average assay value of concentrates, 66·45 per cent. M.T.; total expenditure, £19,328; estimated revenue, £13,649. During March 2,682 tons of Blaauwbank ore were treated, from which 40·7 long tons of concentrates were produced.

The Gold Mines of the Congo.

The Kilo and the Moto Mines (the Congo State-owned gold mines in the north-eastern part of the Congo) have produced together:—In 1914, 1,721 kilograms 355 grams (55,350 ozs.); in 1915, 2,622 kilograms 778 grams (65,013 ozs.); in 1916, 2,996 kilograms 626 grams (72,150 ozs.); in 1917, 3,554 kilograms 918 grams (111,330 ozs.). The monthly output in the first half of last year exceeded 200 kilograms (6,430 ozs.), and the beds known then were containing great quantities of gold. (According to the 1916 report of the Governor-General—the latest at hand now—the gold reserves known then were exceeding 10,000 kilograms (321,500 ozs.) at the Uélé Mines and the 15,000 kilograms (482,250 ozs.) at the Ituri Mines. The Moto Mines are in the Uélé basin and the Kilo ones in the Ituri basin.) A part of Ituri tributaries not yet prospected seems to contain auriferous gravels. The gold produced in the North-Eastern Congo was sold to the Bank of England on the same terms as the gold from Rhodesia and the Rand. The colony had not to pay the insurance costs, which were considerable, during the war, and so it gets for its gold an advantageous price. Besides these State-owned gold mines there are further ones in the N.E. Congo. These mines are owned by the (Belgian-American) Société Forestière et Minière, and by its sister, the Société Minière de la Tché. These two companies (owned by the Brussels Société Générale and Messrs. Guggenheim, of New York) have in the same districts discovered also fine diamonds, topazes, and other precious stone.

Rhodesia Broken Hill.

The Rhodesia Broken Hill Development Co., Ltd., has just ordered a third lead smelter, which it is hoped will be working by the end of this year, and has decided to undertake considerable expenditure in laying the foundations of a zinc industry. The Treasury, however, still withholds its permission to the issue of reserve shares to the Central Mining Corporation and others who are only too ready to finance the expansion of the South African base metal industry.

* * * *

Tin Losses.

"An extraordinary statement has been made to me by a resident in this county that the Government experiments with respect to the 30 per cent. loss resulting from the present methods of tin treatment have issued in the discovery of a new dry process by which almost the whole of the lost tin can be saved. This news, if only approximately correct," says the *Mining World* Cornish correspondent, "will put an entirely new complexion upon the Cornish mining industry. It will no longer be a question of 'How to save Cornish mining,' because it will have been saved."

The National Bank of South Africa, Limited.

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the ORDINARY GENERAL MEETING of Shareholders will be held in the Board Room of the Bank Buildings, Pretoria, Transvaal, on WEDNESDAY, the 25th JUNE, 1919, at 3 o'clock p.m., for the following purposes:—

1. To receive and consider the Balance Sheet of the Bank's operations for the year ended 31st March, 1919.
2. To receive the Report of the Directors and Auditors.
3. To confirm the appointment by the Board of Mr. E. Oppenheimer as a Director of the Bank.
4. To elect three Directors in place of the Hon. Sir Edgar H. Walton, K.C.M.G., M.L.A., E. J. Renaud, Esq., and the Hon. A. Oliff, who retire in terms of the Trust Deed, but are eligible and offer themselves for re-election.
5. (a) To fix the remuneration of the Auditors for the past audit, and
(b) To appoint Auditors for the ensuing year. Mr. Robert Baikie and Messrs. Dougall, Lance and Webber offer themselves for re-election. The firm of Messrs. Dougall, Lance and Webber was appointed during the past year to fill the vacancy caused by the resignation of Mr. John Dougall.
6. Transaction of General Business.

The Head Office (South Africa) and the London Share Transfer Registers of the Bank will be closed from the 26th to 31st May inclusive for the purposes of this Meeting and for any dividend that may be declared thereat.

Attention is drawn to the following:—Holders of Share Warrants to Bearer are entitled to vote by proxy. Such Shareholders desiring to be present or represented at the Meeting must deposit their Share Warrants at either of the places, and within the times, stated below:—

- (a) At the Head Office of the Bank, in Pretoria, at least Three Days before the day fixed for the Meeting.
- (b) At any of the Branches of the Bank in South Africa at least Eight Days before the Meeting.
- (c) At the London Office of the Bank, Circus Place, London Wall, E.C.
- (d) At Messrs. Cox & Co. (France), Ltd., 22 Rue Louis le Grand, Paris.
- (e) At the Rotterdamsche Bankvereeniging, Amsterdam, at least thirty days before the Meeting.
- (f) At the New York Agency of the Bank, 10 Wall Street, New York, at least forty days before the Meeting.

The instrument appointing a proxy must be deposited at the Office in Pretoria, not less than 48 hours before the time fixed for the Meeting at which the person named in such instrument proposes to vote.

By Order of the Board of Directors,

C. P. MATHEWS,

Secretary

Pretoria, 25th April, 1919.

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AND

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SAMPLES ON VIEW.

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Box 5754.

Phone 1360 Central.

New Albion Transvaal Gold Mines.

In submitting balance sheet to June 30, 1918, the directors say the option to purchase the freehold farm Valsfontein, now extended to March, 1921, has been maintained, and the directors arranged for the acquisition of the eastern portion of Eendracht. According to advice received on February 25 last, the borehole had reached a depth of more than 2,400 feet, the indications being that the drill at that point was not far from the Van Ryn Reef, which it is anticipated will be struck at between 3,000 feet and 3,500 feet. In November the company acquired from Dr. Sauer a one-half interest in an agreement between him and the Boschhoek Proprietary Company for boring on the farm Boschhoek. The agreement with the Boschhoek Company provides for the ultimate flotation of a mining company with a capital of not less than £600,000. Upon that basis this company would receive about 75,000 fully-paid £1 shares in the mining company, after providing for commissions payable on flotation, while retaining in addition valuable rights of subscription to the working capital of the mining company. Boring operations commenced on Boschhoek in November last, and were continued to a depth of 951 feet, when, owing to a dyke intrusion, it became necessary to drill a fresh borehole. On February 25 last the shareholders were informed that the Van Ryn Reef had been cut at a depth of 90 feet from the surface, and that the borehole was being continued to intersect the Nigel Reef, which it is expected will be cut between 1,000 feet and 1,400 feet, below the level of the Van Ryn Reef. Meanwhile the sinking of a shaft to prove the width and value of the Van Ryn Reef is to be undertaken forthwith. The directors feel fully justified in the confidence they have expressed in their previous reports as to the great value which attaches to the various properties in which the company is interested. An extraordinary general meeting has been convened to be held after the ordinary general meeting, at which proposals will be submitted for the increase of the capital by 400,000 shares of 5s. each, to provide for the options which have been granted in connection with the acquisition of Valsfontein, the eastern portion of Eendracht and the interest in the Boschhoek contract, and also to make the necessary provision for additional working capital.

Springs Mines.

Mr. A. A. Coaton, the present underground manager of Springs Mines, has been appointed mine manager, with effect from the 28th April, 1919.

WITWATERSRAND DEEP, LIMITED

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS

NOTICE IS HEREBY GIVEN that the Twenty-first ORDINARY GENERAL MEETING of Shareholders for the year ended 31st December, 1918, will be held in the Board Room, First Floor, Exploration Buildings, Johannesburg, on WEDNESDAY, the 28th MAY, 1919, at 2.30 p.m., for the following business:—

1. To receive and consider the Balance Sheet and Accounts for the year ended 31st December, 1918, and the Reports of the Directors and Auditors.
2. To elect Directors in the place of W. E. Bleloch and J. A. A. Ellis, who retire by rotation, but, being eligible, offer themselves for re-election.
3. To determine the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
4. To transact any other business which ought to be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

The Share Transfer Books of the Company will be closed from the 22nd May, 1919, to the 28th May, 1919, both days inclusive.

Holders of Share Warrants who desire to be present or represented at the Meeting shall produce their Share Warrants (or may at their option deposit same) at the places and within the times following:—

- (a) At the Head Office of the Company, in Johannesburg, at least 24 hours before the time appointed for the holding of the Meeting;
- (b) At the London Office of the Company, Salisbury House, London Wall, E.C. (2), at least 30 days before the date appointed for the holding of the Meeting;

and shall otherwise comply with the "Conditions as to the issue of Share Warrants" now in force.

Upon such production or deposit a Certificate, with Proxy Form, will be issued, under which such Share Warrant holders may attend the Meeting either in person or by proxy.

By Order of the Board,

L. CHARLSTON GOCH & CO.,

Secretaries.

Head Office:

90-94, Exploration Buildings
Commissioner Street,
Johannesburg, Transvaal,
1919

ROBINSON DEEP.

At the third ordinary general meeting of shareholders of the Robinson Deep, Ltd., held at noon on April 25, Mr P. Christopherson, C.B.E., presided and there were also present Lieut.-Col. F. Leslie Brown, D.S.O., and Messrs. M. Honnet, W. S. Smits, F. Raleigh, J. E. Kent, W. S. Saunders, D. W. Possiter, A. E. C. Hocking, F. H. Down (secretary), representing personally and by proxy 823,714 shares out of an issued capital of 1,281,807 shares.

In moving the adoption of the report and accounts the Chairman said: In dealing with the report and accounts for the twelve months ended 31st December, 1918, I will take, first the income and expenditure account. The profit on working was £34,225, and after including sundry revenue of some £5,230, as well as allowing for payments in respect of miners' phthisis, income tax, special expenditure due to the war, interest on loans, etc., etc., the net amount carried to the appropriation account was £3,121, which, together with £71,100, the balance at 31st December, 1917, made the total on the credit side of that account £74,221. Out of this sum £50,000 was absorbed by payment of No. 4 dividend of 2s. per share on the 30th August, 1918, on the A shares and £1,000 by the usual annual provision for the redemption of the A shares—thus leaving a balance of £23,221 carried to the balance sheet.

Taking the balance sheet: On the credit side "property and equipment" increased by £97,813, due to the inclusion of the properties and assets of Turffontein Estate, Limited—the properties having been taken in hand at £101,580; less, however, £3,767 in respect of sales of freehold during the year. At the last annual meeting I dealt with this matter of the acquisition of the properties and assets of the Turffontein Estate, Limited, for 100,000 B shares fully paid, and as the directors' report also gives details of the properties acquired, it is unnecessary for me to say anything further. "Sundry debtors" £15,427 compares with £6,390 a year ago, the increase being largely due (a) to close on £5,000, representing licence moneys in respect of leasehold stands in the newly acquired Turffontein Estate, a portion of which moneys has since been received; and (b) to an increase of £3,600 under certain suspense accounts in respect of purchases of cyanide, zinc, mercury and steel.

Increase of Capital.

Turning to the other side of the balance sheet: The issued capital has been increased by £100,000 by virtue of the 100,000 B shares of £1 each, fully paid, having been issued for the properties and assets of the Turffontein Estate, Limited. The number of reserve shares, viz., 118,193, is therefore 100,000 less than a year ago. This matter of reserve shares is one that will be dealt with at the extraordinary general meeting, to be held at the conclusion of this meeting. The Robinson Deep Gold Mining Company, Limited, purchase account, viz., £1,226,397, is the same as at the end of the previous year for, although the £50,000 dividend (viz., 2s. per A share out of the 4s. per share due in respect of the six months to 31st December, 1917) was paid on 30th August, 1918, the adjustment necessary in respect of the capitalised value of the preference dividends still falling due on the A shares, more than offsets this £50,000. As the outcome of discussion with the auditors it was decided to keep the figure the same as at the 31st December, 1917, which is merely

a per contra item included under the heading of "property and equipment," and will automatically reduce itself eventually as the arrear preference dividends are overtaken and subsequent preferential dividends paid from time to time on the due dates. "Loans with interest accrued to date," viz., £373,389, compares with £213,593 at the end of the previous year, or an increase of £159,796, a matter I will deal with later on. The balance of the annuity account with the Union Government in respect of the undermining rights on the 5.2776 claims, has been reduced from £86,994 to £57,996 by the instalment of £28,998 in accordance with the terms of the grant, so that only two more annual payments require to be made to dispose of this item altogether which, when done, will materially ease our finances. The fund for the redemption of A shares now stands at £3,000, having been increased by the usual yearly addition of £1,000. Sundry creditors £50,633, was in respect of open accounts, wages, stores and sundries, the greater proportion of which has since been paid. That I, think, completes the review of the balance sheet.

Working Results.

Taking now the results of mining operations for the last year as compared with the previous year: The tonnage milled was down by 32,100 tons; the total gold recovered showed a decrease of 13,936 fine ozs., so that the revenue was less by £58,585. Working costs increased by £49,881, so that working profits, including sundry revenue, dropped by £109,119. The following comparative figures of working costs under the headings of wages, stores and sundries will doubtless prove of interest to shareholders:—

	1917.		
	Total	Per	
Tons milled	Costs.	ton.	
	£	s. d.	
White wages	191,763	6/9.979	
Native wages	103,277	3/8.151	
Total wages	295,040	10/6.130	
Stores	255,486	9/1.221	
Sundries	79,402	2/9.944	
Grand Tls.	£629,928	22/5.295	
	1918.		
	Total	Per	
Tons milled	Costs.	ton.	
	£	s. d.	
White wages	230,503	8/3.982	inc. 1/6.003
Native wages	100,122	3/9.398	inc. 0/1.247
Total wages	330,625	12/1.380	inc. 1/7.250
Stores	295,901	11/2.170	inc. 2/0.949
Sundries	63,283	2/4.695	dec. 0/5.249
Grand Tls.	£679,809	25/8.245	inc. 3/2.950

Owing to the flooding of the mine in the latter part of 1917 and early in 1918, consequent on the abnormal rainfall, serious delay arose in carrying forward mine development; and for the same reason serious delay occurred in the installation of the mechanical haulage system on the 35th level, so that the difficult and exceptionally adverse conditions of working which obtained in the previous year were unfortunately more than maintained during the greater portion of the year under review. As pointed out last year, we had to face the fact that relief in this direction could not be expected until ore could be delivered to the mill through the Chris Shaft. The working of the Chris Shaft section commenced in September last. Previously, however, our difficulties were greatly increased owing to the fact that hoisting operations were frequently interrupted for repairs at No. 1 shaft, through which, as you will have readily appreciated,

the whole mine has been served at great disadvantage since No. 2 shaft went out of commission towards the end of 1916. As a matter of fact, on the 2nd September last, the Chris Shaft, still in course of sinking, had to be made use of partially to relieve No. 1 Shaft of some of its burden, in order to carry out repairs in the latter shaft owing to rock pressure in the bottom section. Moreover, the disorganisation of the change over to the Chris Shaft was greatly accentuated by reason of the acute shortage of native labour on account of the influenza epidemic (which severely handicapped all work on the mine), the result being that the available stope faces in that new section could not be worked at full capacity.

Native Labour Shortfall.

The following figures will indicate how short this company has been of its native labour requirements during the year under review. Taking the underground complement: At the beginning of January, 1918, it stood at 70 per cent., equal to 2,972 natives, and gradually dwindled down to 66 per cent., equal to 2,844 natives, just before the influenza epidemic, after which it fell rapidly and was only 57 per cent., equal to 2,440 natives, at the end of the year. To-day it is 64 per cent., equal to 2,780 natives. This shortage of native labour, combined with the extra cost due to the necessity of running the Chris Shaft to handle a small tonnage had a marked effect on the cost of working.

Only 8,143 feet of development was accomplished as compared with 10,869 feet in 1917; the reduced footage is largely due to the floods, development work in the lower levels having to be suspended for six months, which in turn has delayed greater concentration of mining around the Chris Shaft. Facilities for economic mining are gradually improving, and the rate of development work will be extended.

I regret to say that during the first quarter of this year, also, the mine has suffered heavily through the closing down of No. 1 Shaft for repairs, which have now been completed, and we hope the tide is turning and that with a better native labour supply, together with a sounder and improving position underground, there will soon be a marked improvement in results as compared with recent months. The conditions which prevailed throughout last year, and which to a somewhat lesser extent obtain to-day—none of us could have foreseen, and I can only assure you that everything that is humanly possible is being done to bring the position up to expectations.

Borrowing Powers.

This brings me to the subject of the new arrangements for borrowing an additional £100,000 over and above the £300,000 previously provided for. In September last year the Board were faced with the position that unless profits were very much better than our engineers and manager estimated, a further £86,500 would be required to pay our way and to complete the expenditure called for in connection with the Chris Shaft programme. The reasons for this additional money having to be asked for were the reduced profits as compared with what were originally estimated on (the causes of this I have already given) and the unfortunate fact that moving ground troubles had set in at No. 1 Shaft (the only shaft available for hoisting), which made it urgently desirable to hoist all ore through the Chris Shaft, and therefore it became imperative to place that shaft in such

a position as to hoist to the fullest possible extent at the earliest moment. To do this a third hoist and other equipment had to be put in, which, had No. 1 Shaft continued to be available for hoisting purposes, would not have been necessary for some time to come. In view of the position representations were made to the Consolidated Gold Fields in London, and they, in conjunction with the Central Mining and Investment Corporation, Limited (the latter participating to the extent of 30 per cent.), agreed to make a loan up to £100,000 on the same terms as the existing loan of £300,000 at 6½ per cent. per annum, ranking *pari passu* therewith, the lenders having the right of asking payment of the amount, or such portion thereof as may be borrowed from time to time before further preference dividends are paid. The company has so far drawn on this loan to the extent of £67,570, and consequently there is still £32,430, which can be drawn if necessary. We think that the arrangements made will suffice to carry the programme through, more especially as the Ferreira Deep have recently purchased certain of our boundary pillars for the sum of £17,500.

Ore Reserve and Values.

I will now deal with the ore reserve position as at 31st December, 1918. This was estimated at 1,632,000 mine tons of fully developed ore of an average value of 6.9 dwts. per ton. This compares with 1,725,000 tons of 6.43 dwts. at the end of the previous financial year. In addition there were 85,000 mine tons of partially developed ore of an indicated value of 6.42 dwts. This compares with 131,000 tons of 6.52 dwts. previously. As you will see in Mr. Lesho's report 175,000 tons of old grade ore were eliminated at 31st December, 1917, when the previous estimate of ore reserves was compiled, and a further 176,000 tons are now temporarily classified as unpayable owing to still higher working costs. In view of the reduced development footage, the position of the ore reserves must be considered satisfactory as regards width and value of reef. About half of the total ore reserve tonnage is in the lower level ground of the Booysens claims, and is available for working through the Chris shaft, the restricted amount of development work having been principally confined, from causes mentioned in the manager's report, to the lower levels, the disclosures from which exposed an average grade equal to that of the present total ore reserve. In order to ensure a higher ore reserve it will be found advisable to increase the rate of development, which will be accelerated after the cross-cuts from the Chris Shaft reach the reef. With the encouraging development values and widths of reef in the recently acquired Booysens ground, and given the necessary native labour requirements and a reduction in the cost of stores, together with just and equitable relations as between employer and employee, there is good reason to hope that the company will soon be able to commence liquidating its indebtedness and its liabilities to the A shareholders. Dividends to the B shareholders, though inevitably deferred, will then follow in due course. The amount repayable to the Consolidated Gold Fields and Central Mining Corporation will we hope not exceed £400,000, £300,000 of which is, under the agreement, not repayable before December, 1922. As I may remind you that taking a fair average of pro-

fits over six years ending in 1915 these were not less than £300,000 per annum, you will realise that there is under normal conditions no reason to be unduly apprehensive regarding the time it may take to repay these amounts, and that therefore the gradual payment of arrears and resumption of dividends on the A shares in the not distant future may be looked forward to with some measure of confidence.

Jack Hammer Experiment.

You will remember that last year I referred to the successful experiments conducted by your manager, Mr. J. J. Wessels, in the direction of the mechanical replacement of hand drilling natives, by the Jack Hammer, and that as the result of his work and that of other mine managers, the use of the machine in question was being largely extended. You will notice from Mr. Wessels' report now before you that during the last six months of the year 50 per cent. of the tonnage stoped was done by these machines, and that a large number of Jack Hammers was installed for the replacing of both hammer boys and reciprocating machines. If this had not been done the shortage of native labour would have been felt more severely and even possibly the mine might have been in danger of having to close down. The initial cost of installing Jack Hammers is high, more especially in consequence of the war, but the engineers and Mr. Wessels consider the results obtained fully justified the expenditure, which for the year under review amounted to £14,000, this sum being charged out to working costs. We again express our congratulations to Mr. Wessels and others concerned in the results achieved in this direction, and it is of interest to note that the Chamber of Mines, in view of the encouraging results, has appointed a special committee to investigate the use of Jack Hammers.

During last year a further 23 of your employees enlisted for active service, making a total of 213 in all. At the end of the financial year there were 71 still on active service. I regret to say that during the year several further casualties were reported (viz., 4 killed, 3 wounded, 1 taken prisoner, and 1 missing) their names being given in the manager's report. Our deepest sympathies have already been conveyed to the relatives of these men, and I know you will desire to join me therein, and in wishing the speedy recovery of the men who were wounded.

It has been somewhat difficult, as you will have realised, to give a properly connected account of all the innumerable difficulties and disabilities encountered and sustained during the past year in connection with our operations. It has been an exceptionally trying and disheartening year for all concerned; indeed it has been the worst year in the history of the mine, and I sincerely hope not only that we may never experience another like it, but that we are about to turn the corner. I would therefore wish especially to record our appreciation to the engineering and technical staff, and to the manager, Mr. J. J. Wessels, and all those under him, both on the surface and underground. He and his staff have had to put forth much special and sustained effort in meeting and overcoming the unusual difficulties which have constantly confronted them. I now beg formally to move the adoption of the report and accounts for the year ended 31st December, 1918.

The motion was adopted.

The meeting agreed to the reappointment of the auditors, Messrs. Douglas Low & Co., and Messrs. F. W. Diamond and English.

Articles of Association.

An extraordinary general meeting of shareholders followed, at which alterations to the Articles of Association, involved by the new financial arrangements, were approved. The resolutions will be submitted for confirmation to another extraordinary general meeting to be held on the 17th of May, at 11 a.m.

GEDULD PROPS.

The 18th annual meeting of the shareholders of the Geduld Proprietary Mines, Ltd., was held on April 23, at Consolidated Buildings, Johannesburg, Mr. H. Newhouse presiding.

In moving the adoption of the report, the Chairman said the most important event in the history of the company for 1918 was the decision arrived at in October last to raise new capital for the purpose of sinking and equipping the vertical shaft. The method decided upon was to issue to shareholders 180,000 shares at 35s. each, the subscriber of each share being entitled to an option to take up a further share at any time prior to December 31, 1921, at 40s. The issue was guaranteed by the Union Corporation, Ltd., for a commission of 5 per cent. It was one of the terms of the contract that, if permission was given by the Governments of the United Kingdom and France, the offer in question should be made not only to South African shareholders, but also to shareholders resident in those countries. Such permission was given after considerable delay, with the result that the guarantors did not know the extent of their obligation until approximately three months after the date of the guarantee agreement. It was somewhat disappointing to find that only about 65 per cent. of the shares offered were accepted by shareholders. All the new shares, except 2,834, had already been taken up, and this small balance would be subscribed whenever the company required the money or earlier if the guarantors so decided. The present capital was, therefore, £1,147,166, which would be increased up to £1,150,000, when the 2,834 shares were taken up. The new issue provided £299,250 of new money.

Increased Tonnage.

The tonnage milled had continued to increase, the total for 1918 being 513,200 tons, or say 20 per cent. more than in 1917. The revenue per ton, however, was 6d. less at 29s. 2d. and the costs 4d. higher at 20s., with the result that the working profit at 9s. 2d. per ton did not show an increase proportionate to that of the tonnage, the rise being nevertheless the substantial one of £21,404 to a total of £234,242. In addition, £10,443 was obtained from sundry revenue. As against this, excess mine development taxation, interest, donations, etc., accounted for £24,593, leaving a balance of £220,035 for disposal.

A considerable amount of capital expenditure had again been incurred, the total, including £13,392 carried forward from the previous year and excluding £13,814 spent out of the new capital raised by the foregoing issue of shares, being £93,307. The balance was, however, large enough to enable

dividends totalling 11½ per cent. to be declared. Until after the turn of the year the final dividend was not formally declared until January 28. The amount payable in respect of that dividend was £71,698. Clear evidence of the important effect of an increase of operations on working costs was given by the recent history of the company. The burden of working costs directly due to conditions brought about by the war had reached a total of 3s. 11d. per ton milled at the end of 1918, of which increase 1s. 3d. accrued during the year. Nevertheless, the average working costs only increased 4d., a result which indicated very considerable efficiency, but which had also undoubtedly been helped by the large increase in the tonnage milled.

Working Costs Reduced.

The results for the first quarter of this year showed a reduction of 7.7d. in working costs as compared with the previous quarter, which was very satisfactory. There was a material decrease in the quantity of water pumped and baled during the year, the total of 375 million gallons being 183 million gallons less than in 1917 and 413 million gallons less than in 1916. This reduction had been brought about by the use of the cementation process which was commenced in October, 1917. By means of this process, several large fissures had been sealed off either by the injection of cement under high pressure or the construction of concrete cylinders. All expenses in connection with this work, amounting to £12,500, had been charged to working costs.

Development.

During the year development work had been pushed as much as circumstances permitted. Owing, however, to the necessity for economy in the use of explosives at the beginning of the year and the decreased labour supply at the end of the year caused by the epidemic of Spanish influenza, the total accomplished was only 17,343 feet, or 3,894 feet less than in 1917. Certain virgin ground towards the Modder East had been opened up, and the disclosure was one of considerable importance. Similar remarks applied to the 7th level east from the No. 3 incline shaft, which was developing ground of which nothing had hitherto been known. Its total length at the end of March was 783 feet, and the last 435 feet averaged 10 dwts. over 65 inches. Expressed in terms of ore reserves, the effect of the development done during the year had been to leave width and value unaltered at 61 inches and 7½ dwts. respectively, but to increase the tonnage by 310,000 tons to 2,510,000 tons. This tonnage did not include anything in respect of the work done on the drive just mentioned and only a portion of the ore body disclosed by the winze. It was intended to continue to push development during the current year. The capital raised by the new issue should fully suffice to sink the new shaft and provide for the surface equipment and pumping plant necessary for that purpose, as well as money for the underground stations and so forth needed during the first stages. The native labour force available was ample for all requirements, except during the last quarter of the year, when recruiting was disorganised owing to the influenza epidemic. Apart from the epidemic, the health of the natives had continued to be satisfactory. Since the conclusion of

the armistice, steps had been taken to reduce the abnormal stock of stores carried during the war period. The reduction could not be effected as rapidly as might have been desired, owing to the supplies coming forward at the time which could not be stopped, but at the end of last month the total value on hand was £89,000 as compared with £104,000 on November 30 last. During the war a total of 89 white employees enlisted for active service, equivalent to about 28 per cent. of the average number employed. Of these, 12 either died or were killed and seven were wounded. It was the intention of the Board to commemorate the gallant services of those men by means of a simple though permanent memorial on the mine.

Messrs. G. Sonn and H. C. Boyd retired in rotation from the directorate, but were re-elected by the meeting. Messrs. Charles Stuart and F. W. Diamond and English were re-appointed auditors.

PRINCESS ESTATE.

Mr. H. Newhouse presided at the annual meeting of the Princess Estate and G.M. Co., Ltd., on April 22, and in moving the adoption of the report and accounts, said that when addressing them at the last annual meeting he ventured the anticipation that the work in the vertical portion of the No. 1 shaft would be completed in the third quarter of the year, and that milling to full capacity would then be resumed with reasonable profits. Unfortunately, circumstances which could not be foreseen or avoided arose to make the realisation of this anticipation impossible. The completion of the reconstruction of this shaft in the middle of September synchronised with the outbreak of Spanish influenza, which was very severe on the mine, and led to complete disorganisation of work during the last quarter of the year and a serious depletion of the native labour force. The disorganisation not only affected the tonnage and working costs, but was also the chief cause of the serious drop in yield. The floods in the early part of the year delayed making the south reef ore from the No. 1 shaft accessible, with the result that the richer blocks in the other sections of the mine were depleted before they could be replaced by the higher grade central deep ore; and then when the central deep ore became available, the influenza epidemic made it impossible to obtain an adequate proportion of ore from these richer stopes. Further, the lack of supervision for weeks together, due to the prostration of the whole staff, led to a deterioration of underground conditions from which recovery was not yet complete, but was proceeding. They would be able to judge the extent to which the labour supply was affected and how seriously the shrinkage was felt when he told them that the underground strength dropped to 1,566, or nearly 40 per cent. below the complement. Fortunately, this serious position only continued for a few weeks, the resumption of recruiting operations affording striking evidence of the continued popularity of the mine among the natives, and the supply was now almost sufficient for all requirements.

Net Loss of £29,965.

With working costs abnormally high—the average of 29s. per ton milled was no less than 4s. per ton more than in 1917—the year's operations re-

sulted in a loss of £32,649, or 2s. 11d. per ton milled. This was reduced by sundry revenue—less the expenses for interest, French taxes, donations, reconstruction and depreciation—to £29,965 net. The considerably reduced tonnage milled was, of course, partly responsible for the increase in the working costs per ton, but there were many other contributory causes—the exceptionally heavy rainfall during the period November, 1917, to April, 1918, which destroyed two of the company's dams and flooded portions of the workings; the higher rate of wages; the further increase in the cost of supplies; and the disorganisation of work and loss of the native labour force through the influenza epidemic. Pumping costs alone were nearly £9,000 higher than for 1917, the quantity of water dealt with being over 211 million gallons, which was 84 million gallons more than the average of the three preceding years. Since the end of the year it had been possible to mill about 1,300 tons per month more than the 1918 average of 18,500 tons per month, which had brought the working costs down about 7d. per ton, but the grade had remained considerably below normal, and the quarter's workings had resulted in a further net loss of £10,449, after allowing for the sundry revenue and the difference between the charge and the expenditure for development.

Though their consulting engineer and general manager believed that the sub-normal grade which was in part responsible for these disappointing results would prove to be temporary, in the light of the unrealised anticipations of the recent past, he did not care to express any opinion as to what the future might have in store, particularly as working costs also needed to be substantially reduced, which was not an easy matter in these days. Strenuous efforts were, of course, being made to improve the position of affairs.

Advances Absorbed.

It would have been clear to them that the continued loss on working, in addition to the capital expenditure, had more than absorbed the funds provided by the recent share issue, and the Union Corporation, Ltd., had come to our company's assistance with advances bearing interest at the rate of 6½ per cent. per annum. At date, the indebtedness to that Corporation amounted to £41,250. With regard to the sinking operations and development work accomplished during the past year, they would see from the technical reports that after the bend in the No. 1 shaft had been cut out, and the reorganisation of the hoisting equipment completed, the vertical portion of this shaft was sunk 363 feet, but, owing to the flooding, the sinking of the incline portion was delayed nearly seven months, operations not being practicable until towards the end of July. In consequence, only 108 feet could be accomplished, and the 15thm level was not reached. The development footage (4,622 feet) was some 2,200 feet less than in the previous year, chiefly for the reason that little development was possible on the South Reef at No. 1 shaft until after the completion of the reorganisation work, the footage on this reef being only 15 per cent. of the 1917 total. Work was, however, pushed ahead on the Main Reef, the footage on this reef being 45 per cent. more than that of the previous year. Another result of the great hindrance to work was that the condition of the incline shaft was such as to continue to involve a considerable monthly bill for repairs. Owing to the curtailed

development on the South Reef, the total ore reserves at the end of the year (380,000 tons) showed a drop of 123,000 tons, of which 110,000 tons were South Reef. The value and width were, however, slightly higher at 7.2 dwts. and 37 inches respectively.

Current Operations.

During the first quarter of the current year a total of 979 feet had been developed, of which 130 feet sampled on the South Reef averaged 9.5 dwts. over 25 inches and 685 feet sampled on the Main Reef averaged 7.5 dwts. over 42 ins. The directors considered that the need to maintain an abnormal supply of stores and materials for mining purposes ceased with the conclusion of the armistice, at which date the value on hand was about £41,500. It had not been possible to effect a rapid reduction, owing to the supplies then coming forward which could not be stopped, but at the end of last month the total value on hand had been reduced by about £12,000 to about £29,400, and there would be further reduction until a normal stock was reached. During the war 57 of the company's employees enlisted for active service, which was equivalent to about 25 per cent. of the average number employed. Of these, 8 laid down their lives and 6 were wounded. It was the intention of the board to

commemorate the gallant services of these men by means of a simple though permanent memorial on or near the mine. The payment of allowances to those who were still serving during last year, and to their dependents, was continued throughout the year. Thanks were due to their consulting engineer and to his assistant, Mr. Overbeck, who acted during that gentleman's absence on leave, to their manager and to their respective staffs and employees.

The reports and accounts were adopted, and Messrs. J. Friedlander and H. Strakosch were re-elected to the board.

VAN DYK PROPRIETARY.

Mr. H. Newhouse presided at the 14th general meeting of the Van Dyk Proprietary Mines, Ltd., held in Johannesburg on April 22, and in moving the adoption of the reports and accounts, he said that means of further economies effected in the expenditure and a slight increase in the revenue, the net expenses for the past year were brought down to approximately £300. These it was possible to meet without obtaining a further advance from the Union Corporation, Ltd., hence the

indebtedness to that Corporation was only increased by the interest charge and amounted at the end of the year to just over £100,000. A partial settlement had been received from the insolvent estate of the former lessee of the agricultural rights, and it was expected to obtain in all about 60 per cent. of the company's claim, in addition to which a considerable quantity of fencing had been taken over in terms of the lease. The new lease with other parties, to which reference was made at the last meeting, was still operative.

TUDOR G.M. CO.

In moving the adoption of the reports and accounts of the Tudor Gold Mining Co., Ltd., at the annual meeting in Johannesburg on April 22, Mr. H. Newhouse said very little change had taken place in the affairs of the company during the past year. A further saving was effected in the expenditure, with the result that the revenue derived from interest on the fixed deposits was almost sufficient to meet the expenses—apart from claim licences.

Dropping Treasury Capital Control.

The restrictions on new issues of capital for domestic purposes are to be removed forthwith in England. Mr. Austen Chamberlain (Chancellor of the Exchequer) stated in Parliament that he had come to the conclusion that he was no longer justified in attempting to maintain Government control over the distribution of capital for domestic

purposes. The restrictions on investments outside the United Kingdom would not be removed. It has taken a long time to convince the Treasury of the necessity, in the interests of British finance, trade and industry, for speedy action in this matter, but the campaign for the removal of the restrictions has at last been successful. Licences must, however, still be obtained for capital issues for the Overseas Dominions of the Empire.

A Watch that Workers Need at the Price they want to pay.

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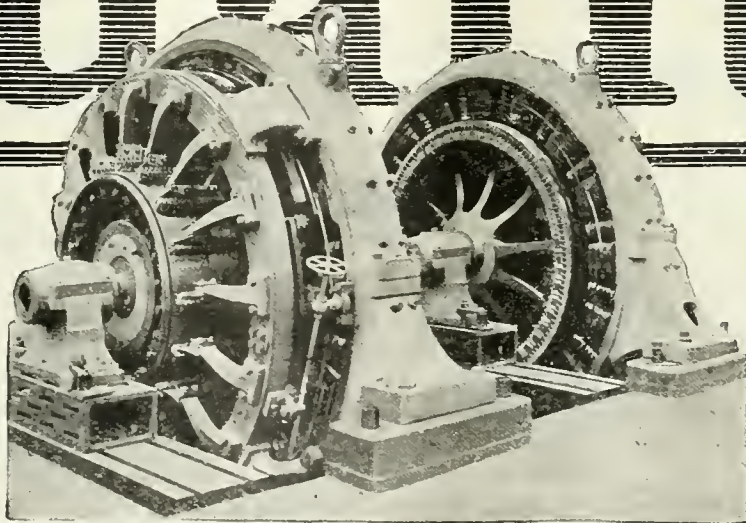
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CONTENTS AND SYNOPSIS OF THE PRINCIPAL ARTICLES IN APRIL ISSUE.

ENGINEERING TOPICS.—Engineering and Agriculture.

THE ELECTRIFICATION OF SEED.—A description of some remarkable and apparently successful experiments, upon a practical scale.

THE PRETORIA IRON WORKS.—An ironworks has been established at Pretoria, and pig iron of very good quality is being satisfactorily produced. As the first undertaking of its kind in South Africa, it has begun operations under most favourable auspices, and will doubtless be the pioneer of a great industrial future in this country.

ROAD TRANSPORTATION: LESSONS FOR SOUTH AFRICA.—Some useful suggestions upon a matter of importance.

CHEMICAL ENGINEERING IN SOUTH AFRICA.—An interesting and valuable paper by Professor Wilkinson, of the South African School of Mines and Technology, upon a subject of special importance to the Union.

THE HYDRAULIC RAM.—A description of a simple but effective pumping engine which can be erected at a reasonable cost and run at a minimum of expense with only a small head of water.

THE MANUFACTURE OF CARBON ELECTRODES.

A FORM OF MOLLIER STEAM DIAGRAM.—A simplified method of using this well-known diagram has been devised by Mr. G. M. Clark, Past-President of the South African Institution of Engineers. The article gives an abstract from a valuable paper by him upon the use of the diagram in its new form, known as Clark's Steam Slide Rule.

NITRATE OF POTASH IN SOUTH AFRICA.—It is claimed that the deposits of nitrate of potash that are about to be exploited in the Hay and Prieska districts will break the German Potash Monopoly, and be a powerful competitor against the Chilean nitrate industry.

THE PORT ELIZABETH POWER STATION.—The article gives a brief description of a well designed and excellently managed municipal electric power undertaking.

RAILWAY ELECTRIFICATION.

STEAM v. ELECTRICITY IN SINKING AND WINDING.—A well-handled review of a subject of considerable local interest by Professor Buchanan, of the South African School of Mines and Technology.

OPITUARY.—The late Mr. Hubert Davies.

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Notes and News.

Cold Discovery in the Belgian Congo.

Reuter at Brussels says that the Colonial Department has been informed of large quantities of gold being discovered in the Uelle district in the Belgian Congo.

* * * *

Sakalava.

The board of the Sakalava Madagascar Proprietary Oil Fields has received a cable from the field engineer in Madagascar stating that he has completed the under reaming of the No. 6 borehole and that the conditions are favourable for casing the hole.

* * * *

Prospecting in the Northern O.F.S.

We understand that there is some revival of interest in prospecting for gold in the northern part of the Orange Free State. With the exception of the boring operations of the New Rand Syndicate, there has been no evidence of much activity in this part of the country since the days of the Orangia Main Reef, and the results secured will be noted with considerable interest.

* * * *

Newdwarf Gold.

This syndicate has been given the right to subscribe at par for 150,000 shares within twelve calendar months from the proclamation of peace. Suitable arrangements have been made to finance the company. The company retains its property in Rhodesia, recently let on tribute, which is not now being worked. The new interests acquired are situated on the south-eastern extension of the Far East Rand and comprise options granted more than two years ago upon favourable terms, and running until January, 1922, and June, 1921.

* * * *

The Debt of the Empire.

The Statist is offering an award of one thousand guineas for the best scheme for dealing with the Empire's debt created by the war. The scheme must be practical, non-Party, informative, and original, governed by economic conditions within the Empire, and give a due regard to our political, economic, and commercial relations with other countries. The basic principles underlying money and trade and the duty of those who control wealth and encourage production are to be observed, and only those of British or Colonial birth will be permitted to compete.

* * * *

The Union's Mineral Production.

The returns issued by the Chamber of Mines show that the mineral output for March of the Union was valued at £4,029,164, an increase compared with February of £400,443. Total gold output represented £3,034,809, an increase of £325,567. Diamond production was 202,103 carats, valued at £649,741, an increase in carats of 31,128 and in value £119,320. The coal output was 846,323 tons, representing £286,027, an increase of 48,139 tons, and in value £15,482. Transvaal collieries produced 538,332 tons, an increase of 28,160; Natal, 238,059 tons, an increase of 4,171; Free State, 69,597 tons, an increase of 5,840. Sales and shipments of copper in March from Transvaal and Cape propositions totalled 297 tons, valued at £13,370, and of tin 128 tons, which was marketed at £20,348. The labour return shows that 32,231 whites and 254,956 coloured were employed in mining throughout the Union in March, the former an increase of 307 and the latter of 13,269. Supplementary statistics relative to wages are of interest. In 1918 the amount paid in salaries and wages, including the war bonus, was £9,824,794; in the Cape £863,684 was paid; in the Free State £224,849; and in Natal £301,083. The total was £11,213,410, an increase of £654,913 compared with 1917. The total paid to Asiatics, natives and other coloured persons last year was £7,402,896, a decrease of £216,570 compared with 1917.

Provincial Gold Profit Tax.

In the Transvaal Division of the Supreme Court the Administrator applied this week for leave to carry into execution the recent judgment of the Court in reference to the liability of the New Modderfontein G.M. Co., Ltd., for the payment of the gold profit tax due under the Ordinance of 1918. The Court granted leave to issue execution, qualified by the condition that security must be given not only for the performance of such order as may be made by the Appellate Division, but also for the repayment of the amount for which the execution was levied, or for which payment was made, together with interest at 6 per cent. per annum from the date of the payment of the levy, as the case may be, and for repayment of the costs of the trial. The costs of the application would be costs in the appeal.

* * * *

Koodoo Diamonds.

The secretary of the Koodoo Diamond Mining Syndicate, Ltd., writes: "I am instructed by my board to state that the first trial washing resulted in an average yield of 17½ carats of diamonds per hundred loads. These stones have been valued in Kimberley at £3 per carat, but a low estimate of £2 per carat would be highly satisfactory, considering the property is carrying the old Free State title, thus all diamonds found belong entirely to the syndicate. The deepest shaft is now 63 feet in pure yellow. At this depth two drives, viz., north and south, have been started, while the work of the other shafts is now well advanced. The yellow ground at 63 feet is a great improvement on that found at 25 feet. The ground out of those drives is being screened as it reaches the surface, and it is thus hoped that a large quantity will be available for treatment as work proceeds."

* * * *

The Government and the Labour Congress.

At the Trades Union Congress being held at Bloemfontein this week, a telegram was read from the Minister of Mines, stating that on the suggestion of the Industrial Advisory Board recently appointed to advise the Minister on these matters, the Government was considering the question of summoning a conference of employers and workers to consider the questions of working hours, wages, and general conditions in the various industries in South Africa. Representation on the Industrial Group system, it was added, would probably be the best. A draft scheme was being prepared and was being communicated to the conference. The telegram further stated that the Government would provide railway warrants for the delegates from their homes to the conference, and subsistence allowance of £1 daily would be made. The Minister asked for the co-operation of the Congress, and for an expression of any views it might put forward. Resolutions in favour of the nationalisation of the mines have been adopted.

* * * *

Mine Labour in Rhodesia.

Native labour for the mines in Rhodesia has suffered from much the same drawbacks as on the Rand. At the annual meeting of the Rhodesian Native Labour Bureau the other day the chairman said the number of natives supplied in Southern Rhodesia last year was only 7,144, which was insufficient to meet the demand. The shortage was due to the war, the East African troops requiring all the labourers as carriers, and also to the influenza epidemic. A number of natives, however, had re-engaged themselves, which indicated their satisfaction with the treatment in this country. The recruitment charges had been reduced considerably as compared with previous years. In the meantime the Bureau had greatly improved the organisation to cope with future operations. The natives had now been released from war service, but were engaged in their own affairs, cultivating land, etc., and it would probably be a year before normal order was restored. Recruiting had been restarted in the most northerly part of Northern Rhodesia, and an improved supply was expected from Barotseland. He believed that the position was now steadily improving.

The Diamond Output.

Replying to Mr. Creswell in the Assembly this week, the Minister of Mines stated that the total diamond production in the first six months of 1914 was: Premier Co., 892,241 carats; De Beers, 1,017,871; German South-West Diamond Co.'s south fields, 615,405; north fields, 12,500; total, 627,905; Jagersfontein Co., 144,702; grand total, 2,682,719. The production from these producers from October 1, 1918, to March 31, 1919, was: Premier Co., 389,317 carats; De Beers, 414,842; German South-West Diamond Co., 191,889; and Jagersfontein Co., 72,260; grand total, 1,068,308 carats. The Government, added Mr. Malan, would take the necessary steps to see that the production of the Premier Co. was not unduly limited.

* * * *

Tweefontein Colliery.

As from July 1 last year the property of the Tweefontein Colliery, Ltd., passed, it may be remembered, into the big new combine styled the Tweefontein United Collieries, Ltd., and the former concern is now therefore only a holding concern in the latter. The payment which it received was 150,000 ordinary and 75,000 cumulative and participating preference £1 shares in the Tweefontein United. Out of the profit from working its old colliery for the first half of last year and dividends from its shareholdings for the second half, the Tweefontein Colliery announces a net profit of £18,200, from which it is recommended that the dividends on the Preference shares for 1918 should be brought up to 10 per cent. (being the maximum), and on the ordinary to 20 per cent. There will be left £20,817 to be carried forward, against £22,120 brought in. Normally, apart from the effects of the recent influenza epidemic, the Tweefontein United Collieries is already able to produce up to 100,000 tons of coal monthly, but the plant already installed will easily admit of an output of 120,000 to 135,000 tons monthly whenever Transvaal coal trade conditions justify it.

* * * *

The Diamond Market.

The *Financial News* in mail week writes of the diamond market: There is no change to report in the condition of the diamond trade; in other words, it is as strong as ever. The Syndicate once more sold out without having satisfied demands. The goods marketed during the week were from the Premier mine, which, as usual, found very ready takers. The Premier produces a goodly quantity of industrial stones, and as regards these qualities, although prices have been advanced by 7½ per cent., everything was eagerly snapped up. As we have previously pointed out, the demand for the industrial stuff continues to broaden. Firms are at last beginning to find that although the diamond tool may cost more than emery paper or other substitutes which were formerly employed, it more than pays to use it on account of its durability and hardness, and consequently its greater precision. The inquiry for rough goods is reflected in the cut article also, and large sales have again taken place. One effect of the war has been to re-establish the cutting industry in this country. For many years it was lost, and was centred on the Continent, and naturally the profits and advantages, including the circulation of wages that attach to it, accrued to foreign operatives. We understand that there are now 500 legless soldiers working at Brighton in the manufacture and polishing of diamonds—a very practical way of assisting those who have become disabled in the cause of freedom. Our Belgian correspondent informs us that things in Antwerp are shaping well, and that a large number of factories have resumed operations. It is worth noting that in the three centres, Amsterdam, Antwerp, and England, as far as diamond cutting is concerned, there is keen and friendly rivalry, which is naturally good for the trade. Each country knows that it cannot eat up everything, and arrangements are being made by all interested to give general satisfaction and to work in amity.

Survey Certificates.

For some time past the number of Government certificates secured by mine surveyors has been deplorably small. Thus in the last examination (March) there were twenty-one candidates and no passes, whilst in the November examination, out of twenty candidates only three passed. In view of such a state of affairs we are pleased to hear that Professor Yates has decided to add this subject to the curriculum of the Mining Institute, and we wish him his usual success.

* * * *

Standard Bank Monthly Review.

The Standard Bank of South Africa, Ltd., is now issuing a monthly review, designed to focus industrial, trade, and financial conditions, in a form readily accessible to the business community. The first of these statements deals with the situation as at the end of March, and covers weather and crop reports, and other agricultural matters, including live-stock progress; the state of the produce market in the leading centres of the Union; the latest mining reports and statistics; a survey of the position regarding manufactures and business circumstances, and, finally, the current statistics, as revealed by banking returns, of finance and trade.

* * * *

Prohibition of Gold Exports from the United Kingdom.

The Board of Trade announces that an Order of Council prohibiting the exportation of gold coin and bullion to all destinations will be issued. Pending the issue of the Order the Board has directed the Commissioners of Customs and Excise to take action to prevent such exportation in accordance with their powers under Section 3 of the Customs (War Powers) Act, 1916. The Order will also provide for the transfer of gold leaf and liquid gold from list A (that is, prohibited to all destinations) to list C of prohibited exports (that is, prohibited to certain neutral destinations in Europe). The Board of Trade also announces that as from the same date a general licence will be issued to permit of any quantity of gold bullion to be imported.

* * * *

Chicago-Gaika Development.

The report of the Chicago-Gaika Development Company for the year ended 30th June last states that the receipts from interest, dividends, etc., amounted to £1,852. During the year the Board took advantage of the rise in the shares of the Gaika Gold Mining Company, and sold a considerable portion of their holding, realising a profit of £6,968. An amount of £10,000 has been written off the investments in respect of shares, the loss on which has since been ascertained. Accounts show a loss of £2,710, increasing the debit balance to £24,150, less income tax £881. Since the date of the accounts further Gaika shares have been realised, and the company's cash assets are represented by about £40,000, invested in National War Bonds and Five per Cent. War Loan. The sum of £2,720 was expended on the Asbestos option referred to last year. Since that date a further sum of £10,000 has been paid, thus securing to the company a full 40 per cent. interest in the Birthday Asbestos property. This property is situated in the Belingwe district in Rhodesia, and is now equipped with a suitable plant. The developments are of a very encouraging nature; a large tonnage of fibre has been opened up, from which sales have been and are being made under contract with a well-known firm. The outlook is one of considerable promise. During the present year a considerable amount of development work has been done on the Primrose claims with satisfactory results, and the board hope soon to be able to determine whether the property shall be worked by the company or be given out on tribute. The tribute is still proceeding on the Connemara mine, and regular royalties are being received.

TOPICS OF THE WEEK.

MORE ABOUT A SOUTH AFRICAN MINT

THE question of a Mint for South Africa continues to be vigorously discussed, and it is satisfactory to know that the heads of the mining industry have made representations to the Government regarding the desirability of fixing upon Germiston or some other Reef centre as the site rather than Pretoria. In view of the saving of time and expense involved in the choice of a Reef centre, it seems unthinkable to us that the Government should decide otherwise. The chief danger to the project, we imagine, lies in delay, and in the lack of sympathy it is but natural to expect from the Imperial Government and the Bank of England. The case for a South African Mint, however, seems to us unsailable. In our next issue we hope to print the regulations governing the operations of the Ottawa Mint. While every self-governing Dominion of the Empire except New Zealand—which gets its gold cheaply minted in the adjoining Commonwealth—has its Mint or Mints, the Union is still without one. If it is economically sound for Australasia, with a maximum gold production (1903) of 18 millions sterling, to have three Mints, it seems economically unsound for South Africa, with a production more than double this amount, to be without one. As the *Cape Times* very opportunely reminds us, when the subject was somewhat perfunctorily discussed in the Union Parliament in 1912, the Finance Minister (then General Smuts) was inclined to look askance on the proposal on the ground that the payability of a Mint was somewhat doubtful, and that the Imperial Government had specifically refused to share the profits on the coinage of silver and copper. However this may be, there would seem to be no doubt that the Australian Mints are very profitable to the producer and not unprofitable to the Government. To illustrate the latter point first, at the Perth Mint in 1912 the average amount charged for assaying, refining and coining was 2-73d. per ounce of deposit. In that year the amount treated was 1,479,079 ounces, consisting of 4,779 separate deposits. A profit was made equal to 1-5d. per ounce of deposit. The question of profit to the Government, however, is of far less importance than that of the gain to the industry. When the war broke out the Bank of England, on behalf of the British Government, agreed to buy the bullion in South Africa, the producers to defray all expenses up to the time of the delivery of refined gold to the Bank of England in London. This arrangement is understood to be still in force. On the other hand, the gold produced in Canada and Australia is refined and minted on the spot. That is to say, the gold mines of South Africa have to incur extra charges under the following heads as compared with gold producers in Australia and Canada: Packing for export, railage to the coast, freight from Cape-town to London (or, as it was during the war, to Ottawa or Bombay), insurance, bank charges for handling the bullion at Johannesburg, Capetown and London, exchange, extra expenses on assaying and refining and 1½d. per standard ounce to the Bank of England. In reference to the last item it may be stated that the Australians get 77s. 10½d. for their gold from the local Mints, while the South African producer gets only 77s. 9d. from the Bank of England in London! Furthermore, for the last two years the British Government, through the Bank of England, has been taking over the Canadian and Australian gold at the local Mints at its full value of 77s. 10½d. per ounce. Thus South African producers have to incur the risk and expense of taking their gold to the Bank of England in London, and then get only 77s. 9d. per standard ounce for it, while Canadian and Australian producers, without incurring any risk or expense, get 77s. 10½d. per ounce for their gold in their own countries. The loss to the Rand industry and to South Africa during the war owing to the lack of a Mint is conservatively estimated to exceed £300,000 to £100,000 a year. During the war realisation charges, we believe, came to as much as 2s. per ounce, and even to-day are only 8d. per ounce less. In fact the more the matter is studied, the more clearly is it seen that the country and the industry have much to gain and nothing to lose from the early establishment in our midst of a Mint.

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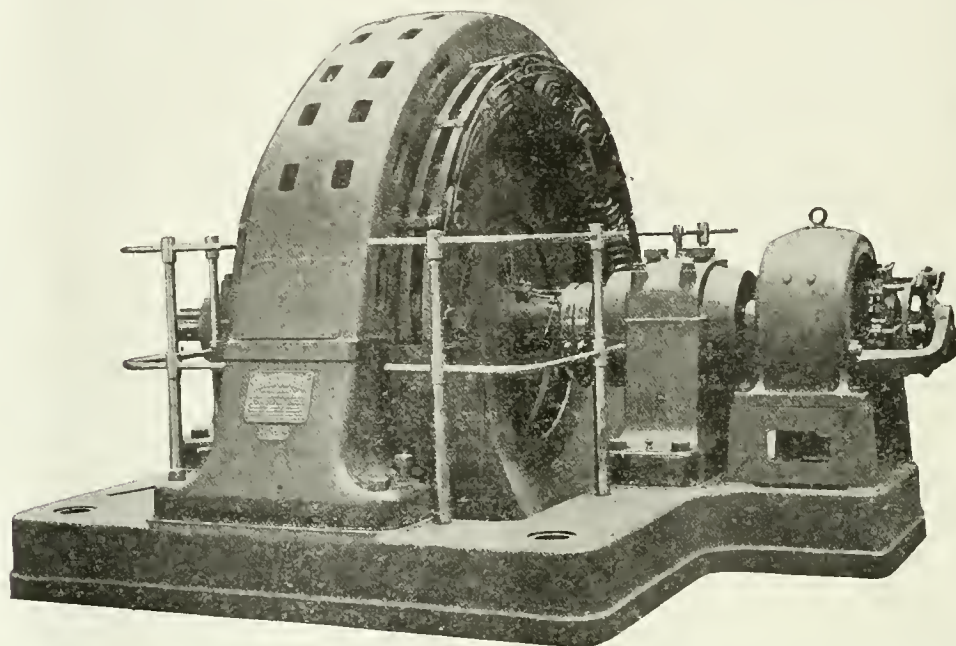
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WILL JOHANNESBURG LAST?

Some Remarkable Contentions by a Sceptic—The Rise of the Far East and the Decline of the Central Rand—The Question of Subsidiary Industries—What We Live On and Where the Money Comes From—Johannesburg Bricks and Mortar as an Investment—The Springs—Breyten—Delagoa Railway—Are We to Live on the Reflected Glory of the Far East Rand?—A Study in the Balance of Reef Power.

[By a Correspondent.]

"Is Johannesburg going to last? Are we capable of maintaining our population and prosperity when the mines in close proximity to this town are exhausted, as most of them soon will be? Have we developed or are we developing, or are we likely to develop, permanent and abiding industries in Johannesburg; or is this town going to exist on the reflected glory of the Far East Rand and of that Farther Rand which in the fullness of time will assuredly be established? Is our property over-valued, and are we taking no thought for a morrow of depression? In short, are we living in a fool's paradise of prosperity, or have we attained to a position of sturdy industrial stability which renders us independent of the crucial fact that within the next five years the majority of the mines of the Central Rand will be gutted and that before a decade has elapsed not more than half-a-dozen properties will be conducting gold winning operations on a large scale between Randfontein and Bokshurg?"

UNANSWERED QUESTIONS.

These are questions that must often recur in the minds of all thinking inhabitants of this town. Yet nobody seems to attempt to answer them. Most people appear to have some vague ideas on the subject. Some will tell you that Johannesburg has become a large distributing centre, that the administrative headquarters of the big mining groups will always remain here, and that the colossal offices and warehouses, Municipal and Government buildings and shops and theatres and schools and banks and residences provide a telling rejoinder of "Yes" to the question whether Johannesburg is going to last. This, I must confess, is not convincing to me. I do not pretend that I am an infallible financial prophet capable of discerning the minutest details of the Rand and Johannesburg of the future. I am not enough of an economist nor of a crystal-gazer to do this, but I do claim that there are certain facts which confront this town and which it is folly not to face fairly and squarely. If I am wrong I shall be only too pleased to have my contentions refuted. I do not wish to be an alarmist, but the silence that pervades this question has often caused me to wonder, and the very fact that there has been no clear and authoritative statement on the subject from one of the great brains with which Johannesburg is supposed to be so plentifully endowed has tempted me to try and pierce the shroud of secrecy in which the Golden City's future is enveloped. The local press has probably had reasons for not directing attention to this matter, and I do not ask or necessarily expect you, Mr. Editor, to endorse or agree with my views. But I submit and I fancy I may have your valuable endorsement on this point, that the subject is sufficiently important to merit attention in the columns of your valuable and widely-read journal.

THE MINING CAMP THAT GREW INTO A TOWN.

Johannesburg was founded a third of a century ago, and until quite recently it occupied a most favoured situation right in the centre of the greatest gold field of the world. Apart from this there is nothing to recommend Johannesburg from a geographical or economic point of view. It is not a sea port situated on the great trade routes of the ocean. Neither is it a lake port, and it hasn't even a river to boast of. True, it possesses a fine climate. So does Iringa in "German" East Africa, and Iringa has a population of 17 whites and 900 blacks.

Up until the commencement of the Anglo-Boer War Johannesburg was a glorified mining camp. Many people think that it is little more to-day, but it must be admitted that in the last 15 years there has been a wonderful development of Municipal activity. Johannesburg to-day possesses some of the finest buildings in the Southern Hemisphere, a hundred and a half thousands of people, and perhaps the most elastic system of credit in the world—a system so elastic that people can live on the interest of what they owe. But what does it exist on, and where does all the money come from? The mines of course. Johannesburg has always been the hub of the Rand and the gold industry, of which until recently it constituted the centre stone of the whole commercial conception, was responsible for the great bulk of the world's output.

THE SHIFTING OF THE BALANCE.

In the past few years, however, the balance of production and spending power has been shifting eastwards from Johannesburg; not immediately eastwards, but twenty miles distant. It is a fact which needs no emphasis here that whilst the Far East Rand is steadily forging ahead in production, profit-earning and the distribution of money amongst workers and merchants, the mines of the Central area are for the greater part getting to the end of their tether. It is also a fact that the superabundant optimism of a few years ago in regard to Central Rand deeper levels has recently undergone a great deal of modification in the face of hard and unkind facts. Despite this, Johannesburg seems to be regarded by property investors as an everlasting domain of prosperity. A good many people (far too many, in my estimate) appear to consider that war bonds and banks and other first-class investments do not return a sufficiently high rate of interest, whilst on the other hand New Modderfonteins which are probably the soundest mining shares in the world are too risky. But these self-same investment seekers seem to think that Johannesburg real estate satisfies both requirements, i.e., unimpeachable security and a high rate of dividend on the money laid out. In regard to the rate of interest obtained from Johannesburg property, there can be no question that the present return is handsome in the extreme. There is scarcely a vacant house in the Golden City to-day. So far as Johannesburg is concerned neither the war nor the influenza epidemic have decreased the population. On the contrary the inhabitants of this town have multiplied in numbers like the fruitful seed. During the war many thousands of people have flocked here and have taken the billets of men absent on active service or war work. Many of these absentees are now returning but the displaced population refuses to move from a town which they have found lucrative and attractive in many ways. And still poor whites continue to flock here from the smaller towns and country districts of the Union, confident apparently that our pavements are made of gold, cemented with platinum, and embellished by diamonds. They are like flies around the carcass of a newly dead lion, and until the flesh has wholly rotted away they will continue to swarm. Landlords have certainly reaped a rich harvest during the past few seasons, and they are reaping in the corn with a vengeance to-day. Seldom have bricks and mortar, a tin roof and a flimsy flower garden proved so remunerative. In any decent suburb the return on an original pre-war outlay of a few

hundred pounds is fabulous. One would imagine that "Jo'burg" was the suburb of an abiding and everlasting Paradise if judged from the measure of rentals and the price of houses. But Johannesburg is nothing of the kind. It is only the centre of the dwindling Central Rand, and it is extremely improbable that the house harvest can withstand the drought which diminution of industry and production on the Central Rand is going to witness within the next few years.

RENTALS THAT MUST GO DOWN.

I am no special advocate of New Modderfonteins, nor of any particular gold stocks. Mining is more or less of a gamble all the world over, although in the case of mines like New Modders and Government Areas each with nearly ten million tons of highly profitable ore in reserve the speculative element is reduced to a minimum. But I do believe that there is very little sane discrimination exhibited by people to whom mining shares are taboo but who cheerfully and with supreme confidence lay down the money for buildings and houses the value of which mainly depends on the prosperity of the mining industry on which they have been erected. Numerous cases of widows who have lost husbands during this war and who, having come into moderate sums of money, have invested in Johannesburg real estate at the present extravagant prices might be cited. No doubt if you suggested to these self-same investors that they should put their money into Central Rand mining shares they would scorn the idea and retort, "Crown Mines, East Rands? No thanks." But they are nevertheless obsessed with the belief that bricks and mortar founded on the dwindling Johannesburg gold industry offer unimpeachable security and everlasting high rates of interest. Most tenants in this town know to their cost that house rentals here are at present enormous and that they represent a rate of interest which is too good to last when one takes into account the value of the capital invested.

Property values in this town must come down. In this connection it is interesting to hear that one of the most astute corporations in South Africa have recently decided to sell off all their real estate possessions in Johannesburg at "best." The people who have elected to do this are not fools. They are sound business men possessed of a good deal of foresight, and time will prove whether they struck the top of the market or not.

WILL SPRINGS ALWAYS SHOP IN JOHANNESBURG?

When the majority of the Central Rand mines are worked out, where are the people who are at present dependent on these mines for a livelihood going to seek their living? Can Johannesburg absorb them? Inasmuch as there is already a dearth of employment here, it does not seem likely. The industries of this town, apart from gold mining, are not large enough to support a big population, and the obvious field for absorption of the greater part of the population affected directly and indirectly by the closing down of the Central Rand gold mines is the rapidly extending Far and Farther East Rand. Johannesburg, it is pointed out, will still remain the administrative centre of the industry, the gold will be sent to Johannesburg for shipment, the head offices will remain here, and the banks, the theatres, and schools and warehouses and engineering trades headquarters will not migrate. But will the spending power of the Farther East Rand be at the beck and call of this town when Benoni, Brakpan and Springs, and perhaps the Nigel, Heidelberg and Balfour, are the centres of the actual part of the Rand's gold industry? Benoni and Brakpan and Springs have already become exceedingly prosperous and thriving townships, and there can be no doubt that they will continue to forge ahead. There is at present an agitation afoot to complete the main direct line to Delagoa via Springs and Breyten, and if this succeeds, as it well may, Springs will be in a more favoured position in regard to overseas trade than Johannesburg. Note, too, the petition for Saturday afternoon closing. The Reef supports this petition because Springs and Benoni and Brakpan well know that they will reap the shopping harvest which Johannesburg loses. In any case the Far East Rand will gain the bulk of that harvest before many years pass by. Are the Springs and Brakpan and Benoni mine workers and

their families going to continue to do their shopping and enjoy their amusements in Johannesburg if and when those towns offer shopping and amusement facilities comparable with that offered by the capital of the Reef? I think not. Johannesburg may continue to be the month-end Valhalla of the Reef's pleasure-seekers, but custom of itself will hardly be strong enough to decree that Johannesburg shall continue to monopolise the Saturday night parade which to-day we see in Pritchard Street.

HISTORY MAY AGAIN REPEAT ITSELF.

No, Johannesburg cannot live on month-end joy-seekers, and there is no getting away from the fact that the majority of the mines in the vicinity of this town are fast approaching exhaustion. We have similar happenings in other parts of the world to guide our judgment in these matters. Take, for instance, the example provided in a small way by the town of Redruth in the mining division of Cornwall. Fifty years ago Redruth was a very prosperous town, the centre of a large tin and copper industry. But when the adjacent mines worked out their richer deposits and the price of metals dropped on account of the big Straits Settlements and North American discoveries, Redruth entered upon an acute period of depression and the other industries of the place built up on the back of mining—a boot factory, a brewery and a bacon factory—were insufficient to stem the tide of adversity. Thousands of the inhabitants of Redruth and its surrounding hamlets migrated to pastures new in search of a better livelihood than the diminishing tin and copper industries of western Cornwall could offer them. The same thing may easily happen in Johannesburg in the near future—many people are convinced that such a development is pending and are making plans accordingly. But others—and they are in the majority—burrow their heads in the shifting sand of ephemeral prosperity and stoutly declare that such a thing can never come to pass.

WHERE ARE THE OTHER INDUSTRIES?

They point to the great buildings of the town and exclaim, "These are built of solid stone—they can never pass away." True, but the people who tenant them can either pass away or migrate just as they please. A good many of them will have to choose one course or the other. In ten years' time Johannesburg will be no more the centre of the Rand gold mining industry than Pretoria is or will be. And as for local industries other than mining which people talk so much about—where are they? And what attractions does Johannesburg with its labour dictators and thorny racial problems offer to capitalists who have the starting of other industries in view? I may be extraordinarily short-sighted from the commercial point of view, but I must confess I have been unable to discover the avenues leading to employment which will in any way compensate for the loss of work and spending capacity which must inevitably result from the closing down of most of the old Central Rand mines. Shops without customers won't keep Johannesburg. Theatres without patrons will not save the town. Neither will schools without pupils. Where are all these subsidiary industries, I repeat? The beef-canning factories so often spoken of—where are they? We certainly take our time over Chicagoising Johannesburg. Personally, I don't believe in the enthusiasm for canned trek ox, and judging from a cable in the *Star* the other night, there are lots of people who share my views. Distributing centres and agencies? They will go where the money is, and that is eastward. And what else is there—the Delagoa Bay lottery and the races and the Stock Exchange and the illicit liquor trade. Is there any hope of the salvation of Johannesburg? And if so, Mr. Editor, in what manner can that salvation be realised?

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THE OUTLOOK AT THE CROWN DIAMOND MINE.

The Test Wash to Take Place in a Few Weeks' Time—How Development is Progressing—The Character of the Blue—Absence of Hardibank—The Old Mine and the New—The Washing Plant—30,000 Loads on the Old Floors; 3,000 on the New—Idle Rumours and Actual Facts—The Benefit of the Railway—A Favourable Market For the Produce—The Coy's. History and Prospects Discussed.

(By a Special Commissioner of the "S.A.M. & E.J.")

In recent issues of this journal extended reference has been made to the operations of the Crown Diamond Mine and the increase in that company's capital. In view of the interest evinced in the property a representative of this paper visited the mine a few days ago and the results of his investigations are recorded hereunder.

HISTORY.

The Lace Diamond Mining Company, the assets of which concern were acquired by the present Crown Diamond Mining and Exploration Company, Ltd., in 1908, was registered in the Transvaal on February 15th, 1899, to acquire a diamond mine, comprising about 400 claims, situate on the Ruby portion of the farm Driekopjes, about 16 miles north-west from Kroonstad. This company later acquired the freehold of the entire farm, area 2,306 morgen, formerly owned by the Rivas Diamond Mining Company, Ltd. The vendors received 150,000 fully-paid shares. New machinery was erected and duplicate gear was completed in February, 1903. The yield for the year 1902 was 16,562 carats from 142,060 loads of yellow ground, averaging 11·659 carats per 100 loads; 1903, 33,846 carats from 313,483 loads, average 10·8 per 100 loads; 1904, 20,029 carats from 148,234 loads, average 13·51 per 100 loads. Owing to deficient water supply and pending the opening up of blue ground, washing was suspended during the greater part of 1905, but in April, 1906, was resumed. The blue ground on floors at December 31st, 1906, was estimated at 932,562 loads. The authorised capital was £325,000, in 325,000 shares of £1 each; all the shares were issued and fully paid. The capital was increased from £250,000 in 1904. The accounts to December 31st, 1905, submitted March 30th, 1906, showed £4,494 diamond receipts for year and profit and loss debit balance increased to £27,530; diamonds on hand £423, debtors £25; creditors £3,072 and bank overdraft £23,344.

For several reasons, chief amongst which were the presence of large quantities of hardibank in the mine and high costs of operation due to transport difficulties, the operations of the old Lace Company did not result successfully, and in October, 1908, the company was put into liquidation. In that year the proposition passed into the hands of Messrs. Lewis & Marks, who placed it under its present title and aegis of "Crown Diamond Mining and Exploration Company, Limited." Capital: Authorised, £125,000, in shares of £1 each; 100,000 shares issued and fully paid. This company took over the whole of the assets and undertakings, apart from the diamonds on hand, of the Lace Diamond Mining Company, Ltd., and as consideration £75,000 was given in fully paid shares. But under this aegis the company did not at first enjoy prosperity. The accounts to 30th June, 1912, showed a net loss of £45,381. The machinery installed was reported to have a daily capacity of 5,000 loads, but owing to unfavourable results, operations, which were started in 1909, were suspended early in 1910. Work was afterwards resumed. From the run of the washing plant the indications were for a yield of 12 carats per 100 loads, and the value of the product was placed at 40s. per carat. But again fortune disappointed the company, and shortly afterwards the outbreak of war and the consequent slump in the diamond market seemed to preclude the likelihood of any good coming the way of the Crown Diamond Mine, *alias* Lace Diamonds, for many years to come.

THE REVIVAL OF INTEREST.

During the latter portion of the great war period, however, and shortly after the revival of interest in diamond ventures the affairs of the concern took a distinct turn for the better through the disclosures of two boreholes which were sunk in the old mine area. Geologists had for long contended that clean blue ground in all probability lay beneath the top crust of the mine, with its large proportions of hardibank and reef, and this theory was tested by the sinking of two diamond drill holes. In each the presence of blue ground of favourable appearance was disclosed, and the company decided to sink a shaft and drive therefrom in order to further test the value of this discovery.

THE DEVELOPMENT POSITION.

Accordingly an 8ft. 6in. shaft was sunk on the site of one of the boreholes from the 140ft. level to a depth of 300 feet. From this shaft drives have been extended to the north-east, the south-west, the south and the west, and the progress attained in these drives at the time of our special representative's visit (a week ago) is shown hereunder. At that date distances from the shaft were: North-east drive, 86ft.; south-west drive, 231ft. 6in.; south drive, 91ft. 3in.; west drive, 68ft. 3in. The north-east drive had at the distance above noted reached the wall of the mine, but the other drives were still in blue at the above distances, and, judging from the size of the old mine and the fact that there are no indications of any sensible contraction of the pipe area down to the bottom of the open workings, it seems probable that some time must elapse before the other drives reach contacts.

PROMISING BLUE.

The blue ground disclosed in these drives is of very promising appearance, and has favourably impressed old Kimberley men who have seen it. The ground is clean friable blue, showing plenty of "lively" mineralisation, and although one or two large boulders have been encountered it is clear that if appearances count for anything the company has a much more favourable proposition to deal with in depth than it has ever had in its nearer surface undertakings. It is, however, a true old adage that the proof of the pudding is in the eating thereof, and one moreover that has a singularly apt application to diamond mining. A wash is the only test of a diamondiferous proposition. A diamond mine does not lend itself to development sampling like a metalliferous concern, and for this reason the results of the test washing, which will take place in the near future, are being awaited by the public with the very keenest interest.

PREPARING FOR THE WASH.

There appears to be a general expectation that washing will take place immediately, but so far as we can ascertain it is unlikely that a wash will take place for some little time. At present 3,000 loads or more of the new ground have been dumped on the 140ft. level of the old open mine. The technical advisers of the company advise that not less than 5,000 loads should be accumulated before a test wash takes place. If development work was speeded up it should be possible to have this latter amount of new ground available in a very short period of time. But Mr. Parsley, who is in charge of the company's operations, has wisely decided that the most true and representative test of the property

will only be obtained by reaching the wall of the mine in each drive and putting the aggregate tonnage from these drives through the plant. Judging from results secured in the old nearer surface area, some portions of the property are richer than others. In the pit sunk from the 140ft. level above the existing south-west drive results of 14 to 16 carats per 100 loads were secured, and there is a perfectly reasonable disposition to expect that the results obtained in the new ground will at least be as good as those won from the old hardibank area. The technical advisers of the company advise, however, that there should be no selection from any particular area, but that a representative quantity of ground from all round the mine as defined by the existing drives should be tested. Having regard to development progress with reference to the size of the mine, it does not therefore appear as likely that the company will be in a position to have a representative test washing for another six weeks or more. The date of washing will of course be determined by the progress of development, and with a view to expediting work in the drives there has been a suggestion to erect a small compressor plant and instal Jack-hammers in the mine. But it hardly seems likely that such a policy, if adopted, will hasten the date of washing, since the ordering, despatch and installation, etc., of a compressor plant will obviously take time.

RUMOURS AND FACTS.

Two rumours in regard to the property have within the past few weeks excited considerable interest in Johannesburg. One report was to the effect that a stone of over 40 carats weight and worth about £2,000 had been obtained from the new ground, and another was that 60 loads of this ground had been washed without any diamonds being recovered. Both these statements are in point of fact utterly untrue. The first rumour probably originated from the finding of a small stone amongst the 30,000 loads of ground on the floors of the old mine, which are now being picked over and sorted. This old ground, by the way, is expected to yield about 8 to 10 carats to the 100 loads. The second rumour may perhaps be attributed to the sieving of a few handfuls of ground which showed a very excellent deposit.

THE PLANT.

The washing plant of the company consists of eight 14ft. pans, each of a nominal capacity of 500 loads per day, with accessory conveyors, rock breakers and rolls, etc. Four of these pans were dismantled some time ago. The plant is based on the double treatment principle of washing and recovery, and it is not anticipated that more than 1,400 loads per day will be treated without straining the capacity of the equipment. The company possesses good steaming and electric lighting plant, with well-equipped fitting shops, and although the plant as a whole has been idle for some considerable time no great difficulty should be experienced in getting it into effective working commission again.

COSTS, TITLE AND VALUE OF PRODUCT.

The previous operations of the Crown Diamond Mine were materially hampered by high transport charges. Until the construction of the Kroonstad-Klerksdorp railway, fuel and stores had to be transported from Kroonstad, a matter of 20 miles or more. The mine is now, however, only four and a half miles from Rustig station on the new line, and this is obviously a great advantage to the company.

Mr. Parsley fixes six shillings per load as an estimate of cost of mining and treatment. It seems to us that it should be possible to work the proposition at a lesser rate of expenditure, but it is commendable policy to err on the safe side in these matters. It should be borne in mind that the Crown Diamond property is secured under the old Free State title, and is not therefore liable to the heavy taxation on profits which the Premier for instance, amongst the new mines, has to pay the Government. Another favourable feature in connection with the present revival of activity at the property is the high price of diamonds obtaining at present and which it is confidently expected will be maintained for some considerable time to come.

The selling operations of the company are not controlled by the Diamond Syndicate, and the Crown board of directors are free to make the most favourable terms they can for the disposal of the company's product. As to the size and quality of stones found in the past, the figures cited at the commencement of this article may be referred to. In its previous operations the two most valuable diamonds found on the property were each of 80 carats weight, and were sold for approximately £26 per carat.

A BETTER OUTLOOK.

The Crown Mine, after many vicissitudes and numerous changes in management, appears to have at last entered upon a more promising stage of its career than it has hitherto enjoyed. The outstanding favourable features in connection with the mine to-day are (a) the location of clean blue under the old mine area, which seems to indicate that whereas in the past 80 per cent. of the rock hauled was reef and hardibank and boulders, the proportion to-day of this deleterious matter is only one-twelfth. (b) The excellent state of the diamond market (c) The better outlook for working costs, due to proximity to the railway. The ultimate result of these favourable factors can, however, only be measured in terms of diamonds recovered in relation to the cost of recovery, and this only the forthcoming test washing and the further development of the mine can determine.

Barnato Group.

The results of operations of the Barnato group for April are as follows:—

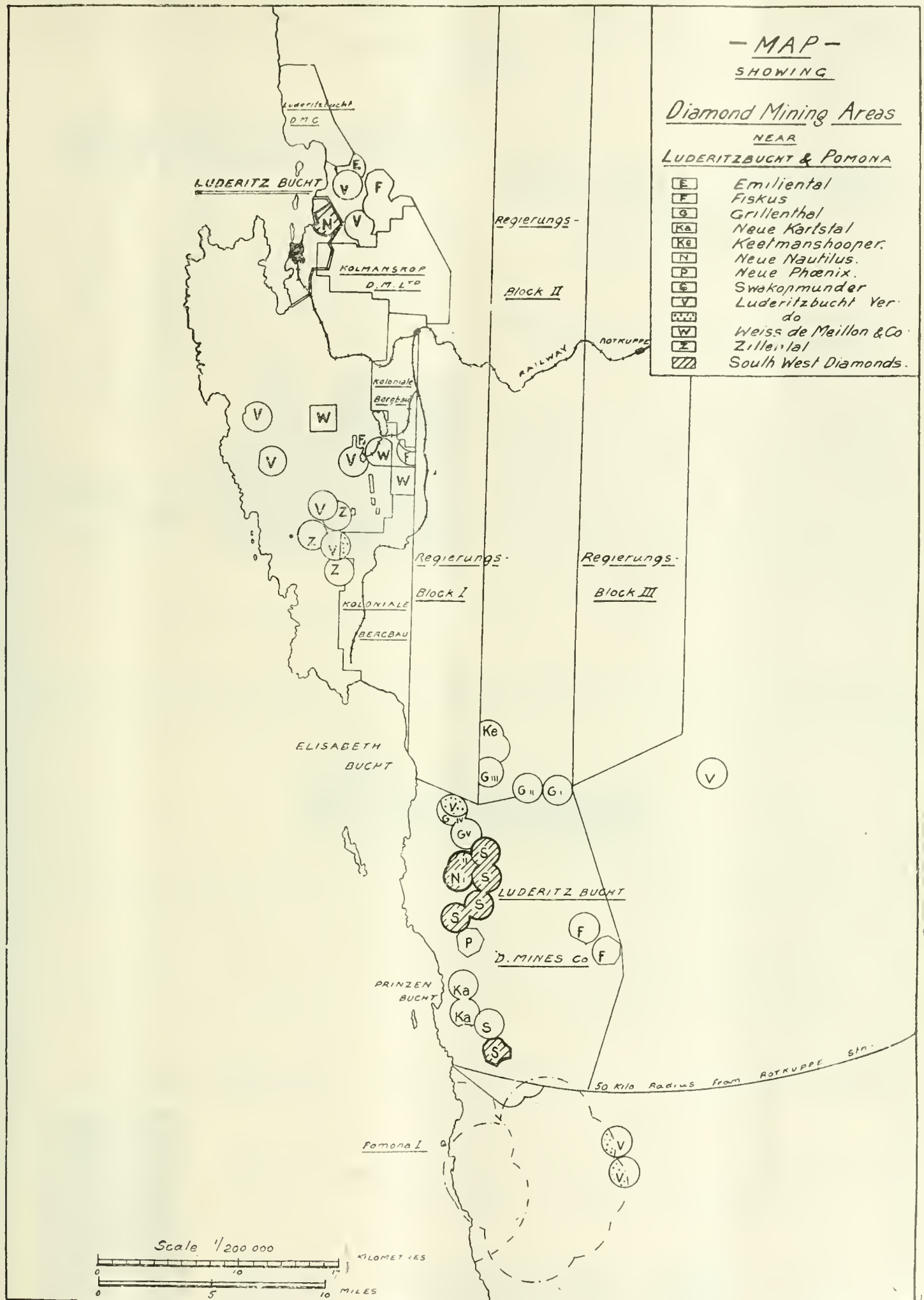
Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	45,000	£55,546
Ginsberg	75	10,520	10,081
Government Areas	200	116,000	204,450
Langlaagte Estate	200	40,000	52,331
New Primrose	90	19,000	17,159
New Unified	60	12,000	11,855
Randfontein Central	600	138,000	162,705
Van Ryn Deep	90	47,400	103,559
Witwatersrand	215	32,500	40,733
Totals and averages ...	1630	460,420	£658,419
March totals	1620	473,230	£662,986

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit includ- ing Sundry Revenue.
Consolidated Langlaagte ..	£11,707	19.870	£11,042
Ginsberg	10,917	20.755	*733
Government Areas	119,971	20.685	85,065
Langlaagte Estate	42,294	21.147	10,206
New Primrose	15,242	16.044	2,002
New Unified	10,003	16.672	1,895
Randfontein Central	153,556	22.255	10,091
Van Ryn Deep	50,271	21.211	54,083
Witwatersrand	35,124	21.615	7,134
Totals and averages ...	£482,085	20.941	£180,785
March totals	£487,812	20.616	£179,310

*Loss.

Monthly Gross Profit, 1919.—January, £162,943; February, £151,054; March, £179,310; April, £180,785.

Ginsberg.—Payable ore exhausted, board decided cease operations at end of May.



The above map exhibits the diamondiferous areas of the South-West African Protectorate. Interest in this territory has been stimulated within the past few days by the announcement of the Administrator of the Protectorate in regard to titles and by the cable received in the House of Assembly from General Botha that the Union has been definitely charged with the administration of "German" South-West Africa under the Mandatory principle. In the above map the diamondiferous areas so far acquired by the South-West Diamonds Company are distinguished by hatching.

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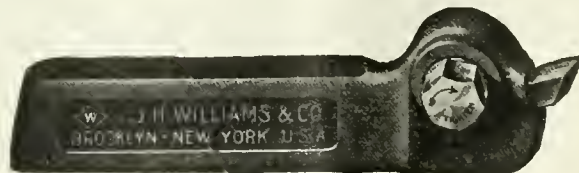
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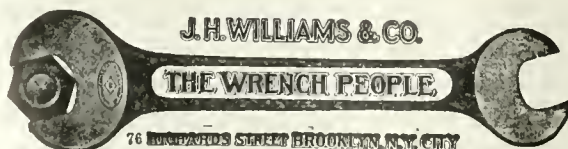
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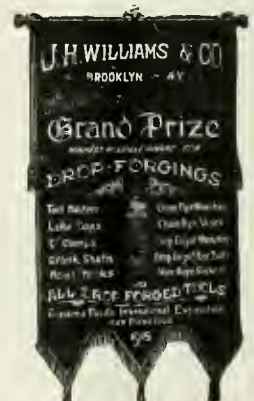
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THE "T.C.L." PROFIT-DISTRIBUTION AND CAPITAL REDUCTION SCHEME.

Directors' Policy Explained—Consulting Engineer's Annual Review of Mining Operations.

In their annual report for 1918, issued this week, the directors of the Transvaal Consolidated Lands Company state that, following the absorption of the Braamfontein Company and as a result of satisfactory realisations, the profit for the past year is unusually high and a large proportion of the company's assets, as will be seen from the balance sheet, is now in cash and otherwise liquid form, the gradual accumulation over a number of years, and mainly the result of the realisation of assets. The company does not require so large an amount of cash for carrying on its business, and the directors have for some time been considering the best means of dealing with the accumulation. It does not appear to the directors desirable to distribute an ordinary dividend, as the annual profits have been and are likely to be insufficient to permit of regular declarations on the present issued capital; the directors consider that the sounder course to pursue is to utilise these accumulated surplus funds to reduce the capital of the company and gradually to bring it down to a figure on which the payment of regular dividends may be expected. After much consideration the directors propose, as a first step in this direction, that a distribution should be made to shareholders of an amount equal to 5s. per share, and that simultaneously the issued capital of the company should be reduced from 971,214 shares of £1 each to 971,214 shares of 15s. each. Adequate cash resources would still remain for the vigorous development of the company's property, which will be more particularly in the direction of cattle ranching and afforestation. Further reference is made in the land manager's report with regard to this. General meetings are therefore being called for the 13th August, 1919, and 10th September, 1919, in order that shareholders may consider the proposal. Should it be approved by shareholders it would thereafter be necessary to apply to the High Court for confirmation. If the Court approves it should be possible to make the distribution and effect the reduction of capital about the end of next October.

In his report on the company's mining and prospecting operations for the year 1918, Mr. J. J. Garrard, the consulting engineer, writes:—Mining and Prospecting.—Groenfontein Tin Mine: Total footage, 2,209 feet. Total tonnage mined, 9,418 tons. The plant ran 161.06 days of 24 hours from 2nd May to 31st December, crushing 3,298 tons of ore and re-treating 1,021 tons of accumulated residues, producing 153.44 tons of 71.3 per cent. tin concentrate—48.16 tons of concentrate were produced during the year from alluvial workings on the property. The year's operations showed a profit of £12,487 (as compared with £6,205 for the previous year), exclusive of the sale to the Zaaipplaats Tin Mining Co., Ltd., of the freehold of a portion of alluvial tin-bearing ground on Groenfontein and Roodepoort. The general position in the mine has been more favourable than at any time during the previous four years. About 80 per cent. of the ore produced during the year has come from the No. 23 working on Groenfontein, referred to in the last annual report, which still continues to carry good ore, and is remarkable as being the deepest working (500 feet on the dip) below the pegmatite outcrop at which tin has been found on the property. It is also the most regular ore body hitherto opened up on Groenfontein. A low level development and drainage adit was commenced during the year following the footwall of the pegmatite vein, which will in due course connect the inclines sunk and risen on the dip of several important older workings which extend at intervals along the footwall of the pegmatite over a distance of some 3,000 feet. This adit had been driven 470 feet at the end of March, 1919, and had already encountered the continuation of an important deposit formerly followed in No. 30 working. All mining operations were hampered by shortage of labour and were practically at a standstill for two months towards the end of the year owing to the influenza epidemic. Mutue Fides Tin Mine.—Total footage, 1,117 feet. Total tonnage mined, 6,344 tons. The ore re-

serve at grass at 31st December, 1918, was estimated to contain 100 tons of 70 per cent. tin concentrate. The plant ran 167.96 days of 24 hours, crushing 1,627 tons of ore, producing 231.52 short tons of 70.9 per cent. tin concentrate. The year's operations showed a profit of £25,760, as against £8,639 for the previous year. Milling proceeded continuously from the beginning of the year up to 19th November, 1918, when shortage of water in the dams prevented the restarting of the mill until 10th January, 1919. About 90 per cent. of the ore produced has been mined from the No. 1 main workings, in which the tin occurs in the form of an extensive irregular seam underlying the main pegmatite vein. The occurrence, which is by far the largest hitherto discovered in the Olifants area, is somewhat similar to that in the No. 23 working at Groenfontein, but in this case the ore is extraordinarily pyritic. This feature necessitated special treatment in the reduction plant, and the difficulty was successfully overcome by the introduction of a new process of magnetic roasting and separation evolved as the result of experiments conducted at the head office, which at once brings up the final mill concentrate, which only contains some 30 per cent. tin, to over 71 per cent. tin. In fact, the average grade of concentrate produced during the last six months was 71.6 per cent. tin. A good deal of prospecting work was carried out during the year when labour was sufficiently plentiful, and the indications point to the probability of locating further profitable ore bodies. Influenza seriously hampered operations towards the close of the year and accounted for 44 deaths amongst the natives, whilst all the white employees and nearly every native were affected.

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General Prospecting.—The company has expressed its willingness to the Government to throw open the whole of its farms, not actually being worked or occupied, to public prospecting on a sliding scale royalty basis. In the case of 111 farms belonging to the company which were thrown open in the early part of 1910, only two tributing agreements have ever been applied for and only one has been actually worked. There is only one example of a tributing area in existence after a period of nine years. If, however, the Government agrees to the suggested basis, there will become available a number of farms, already prospected by the company, on which mineral deposits have been actually located, although these have not been sufficient to warrant the company itself working them. With the benefit of such existing work it is to be reasonably assumed that some additional incentive should be created to encourage further prospecting on the part of the public. The principle involved is that whilst the discoverer of profitable ore becomes entitled to an area of ground sufficient for the establishment of a mine on it, the company naturally hopes to be able to locate further profitable ore on the remainder of the farm, as it has done in the only case where a tribute has been worked.

Mining Interests held by the Company.—Penge No. 780, District Lydenburg: 697 tons of asbestos were produced by the tributors during the year, making a total production of 3,496 tons, of which, however, only 2,793 tons had been shipped up to 31st December, 1918. Munt No. 1026, Stettin No. 1024, Bronkhorstfontein No. 41, Kogelfontein No. 34, Pietersburg District, and Welgevonden No. 216, District Zoutpansberg: About 150 tons of corundum have been despatched by the tributors on these farms during the year. Mutue Fides and Tygerpad Tributing Areas (Olifants Tin Mines, Ltd.): The tributors report having mined 1,566 tons and crushed 1,345 tons of ore, yielding 41.66 short tons of 66.92 per cent. tin concentrate during the year. Swaziland Tin, Ltd.: 394.7 long tons of concentrate were produced from 1,127,672 cubic yards of ground during the year ended 31st December, 1918. The estimated profit was £39,788, as against £30,754 for the previous year, being equivalent to approximately 48½ per cent. and 37½ per cent. on the capital of the company respectively. Dividends totalling 35 per cent. were declared for the year ended 31st December, 1918. Fairview (T.C.L.), Ltd.: The tributors crushed 15,737 tons and recovered 3,997 fine ozs. of gold during the year. About 90 per cent. of the ore came from new workings, being non-refractory, and 10 per cent. from original ore reserves. Rietfontein No. 1228, Lydenburg: The tributors crushed 6,102 tons during the year, recovering 878 fine ozs. gold. A roasting furnace has recently been erected and delivery of further concentrating plant is now awaited. 3,839 feet of development were carried out during the year, the results of which are understood to be satisfactory. Mount Morgan Mine: A tributing agreement was entered into during the year. Ten stamps ran 98 days, crushing 3,145 tons of ore, yielding 223.6 ozs. of gold. The tributor has remodelled the plant and erected four concentrating tables and classifiers and a rotary roasting furnace. The latter, however, proved to be

of too small capacity, and another furnace regrinding plant and an auxiliary gas engine are now being installed. Holfontein: The boring operations commenced at the end of 1916 terminated by the cutting of the reef on 28th November, 1918, in the third hole at a depth of 1,426 feet. A brief summary of the results of the four holes put down is as follows: No. 1 borehole unfortunately encountered a dyke between 723 and 802 feet, embracing the horizon of the reef. No. 2 borehole encountered the reef at a depth of 813 feet one inch in thickness, assaying about 7 dwts. No. 3 borehole encountered the reef at a depth of 1,426 feet one inch in thickness, which with two inches of quartzite above and one inch of footwall slate below, assayed 1 dwt. per ton. No. 4 borehole encountered the reef at a depth of 612 feet one inch in thickness, assaying 23 dwts. per ton. These boreholes are situated at the northern portion of the farm, and it does not necessarily follow that better results should not be obtained from this reef in other places; but it is thought advisable to await developments on adjoining properties before undertaking further drilling. Blane Witkop Zinc Mines, Marico District: Work has not yet been resumed at these mines owing to the impossibility of finding a remunerative sale for concentrate.

Roads.—Owing to the extraordinarily bad state of the majority of roads serving the various outside mines in which the company is interested, in addition to many other outside mines, and the fact that the vote which the Mines Department formerly enjoyed has now been reduced, the company, in conjunction with other interested parties, has decided to petition the Union Government to afford immediate relief from the disabilities now obtaining, especially in view of the fact that in the case of the more important base metal mines the roads must be considered as important feeders to the general railway traffic, of equal importance to many branch lines. The petition is being duly prepared.

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THE APRIL GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of April:—

Company	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
City Deep ...	A151	10	48,500	23,147	£29,199	28 0
Cons. Main Reef	220	6	47,300	17,700	7,753	28 0
Crown Mines ...	660	26	158,000	51,742	32,107	23 5
Durban Deep ...	100	3	25,200	8,352	*156	27 11
East Rand Prop.	440	19	110,000	32,915	10,020	23 3
Ferreira Deep ...	160	7	32,300	13,405	14,367	25 11
Geldenhuis Deep	300	7	47,500	12,818	*4,018	24 5
Knight Central ..	120	3	20,000	7,149	706	29 3
Modder B.	B104	8	54,000	28,574	61,082	22 3
New Modder. ...	c236	15	82,000	41,269	90,131	20 3
Nourse Mines ...	180	5	38,100	12,785	1,426	27 6
Robinson.	180	6	36,300	9,932	2,137	21 10
Rose Deep	300	7	53,000	14,893	13,892	18 5
Village Main Rl.	130	4	17,700	5,471	1,216	24 6
Wolluter	120	4	28,500	8,426	3,238	22 6
Village Deep. ...	180	7	43,400	11,873	2,129	27 10

Tls. & averages 3581 137 841,800 303,451 £265,209 24 0

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.

C Includes 56 Nissen stamps.

* Loss.

Geldenhuis Deep.—Loss due to decreased tonnage.

Village Deep.—Reduced tonnage due to temporary loss of stopes following earth tremors.

Durban Roodepoort Deep.—Loss due to reduced tonnage and yield.

Knight Central.—Accident to hoisting engine still affecting mine output.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of April of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs.	Total Profit
Simmer & Jack	320	7	46,800	10,968	Loss £1,968
Robinson Deep.	115	9	45,300	14,732	Profit 4,866
Knights Deep ..	400	11	82,900	16,821	Loss 850
Simmer Deep ..	220	10	38,600	9,254	Loss 8,922
Jupiter	80	5	21,200	5,639	Loss 3,171
Sub Nigel	30	2	9,550	5,763	Profit 5,840

Totals ... 1165 41 214,350 63,177 Nett loss £4,205

Simmer Deep.—The loss for the month was largely accentuated in consequence of the skip accident that occurred in the Clement shaft.

Reserve Gold.—Simmer and Jack, 300 fine ozs.; Sub Nigel, 2,910 fine ozs.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of April: Tons crushed, 3,970, yielding 1,735 fine ozs.; estimated value of month's output, £7,217; estimated profit for the month, £1,720.

Union Corporation.

Results of operations on the producing mines of this group for the month of April:

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	12,000	£62,642	29 10
Modder Deep Levels ...	70	41,100	89,068	43 4
Princess Estate	60	19,400	25,658	26 5
Totals	230	102,500	£177,368	—

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£11,025	19 6	£21,617	10 4
Modder Deep Levels ...	37,124	18 1	51,941	25 3
Princess Estate	27,127	28 3	*1,769	1 10
Totals	£105,576	—	£71,792	—

* Loss.

Consolidated Mines Selection Group.

The following are the results of operations for the month of April:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines ...	110	47,500	24 7-581
Springs Mines	80	34,940	25 5-843
Totals and averages ...	190	82,440	24 11-933

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines ...	£88,908	37 5-218	£30,407	12 9-637
Springs Mines	67,297	38 6-259	22,771	13 0-416

Totals & averages £156,205 37 10-745 £53,178 12 10-812

Albu Group.

The April operations of the producing mines of this group were as follows:—

Company	Tons Crushed.	Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	13,800	£16,025	23-23	£13,797	*£2,228
Meyer & Charl.	13,610	15,980	23-43	39,489	23,500
New Goch ...	16,600	13,718	16-53	13,138	*580
Rodepoort Un.	24,200	21,403	20-17	23,319	*1,084
Van Ryn Est...	35,150	29,167	16-59	33,681	4,514
West Rand Co.	32,000	36,949	23-09	38,107	1,158
Totals	135,360	£136,242	20-13	£161,531	£25,289

* Loss.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of April:—Central Mines: Tons crushed, 11,850, yielding 4,135 fine ozs. Elandsdriif Mine: Tons crushed, 1,430, yielding 1,018 fine ozs. Vaalhoek Mine: Tons crushed, 1,700, yielding 507 fine ozs. Estimated value of month's output, £23,812; estimated profit for the month, £3,233.

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THE MODDER EAST OPTIONS DEBENTURES.

THE following information has been received from the secretaries of the Modderfontein East, Ltd.: It has been brought to the notice of the board of directors that certain holders of existing options over shares of this company feel that they should be given the right to participate in the subscription of the proposed debenture issue, which, if sanctioned by the company in general meeting on the 15th instant, is to be offered to shareholders in terms of the circular, dated 14th March last.

Having considered the matter, the Board desire to make it known that in the interests of shareholders it is impossible to admit the principle of permitting option holders to rank on the same footing as shareholders in respect of privileges and rights of the Company.

The shareholder, being a part owner of the property and assets, has a definite stake in the Company, which has cost him valuable consideration: in the corporate sense he also bears his share in the liabilities of the Company. The option holder, on the other hand, has no claim of ownership whatever, neither do the obligations of the Company affect him. He merely holds the right—acquired at relatively small cost—to become a shareholder at an agreed price during a stated period. He is free to exercise his right or not, his decision being dependent upon the success or otherwise of the shareholders' property, which, as well as the money to develop it, has been supplied by the shareholder.

On these grounds, in the opinion of the Board, it is manifestly unfair to give option holders similar rights to those enjoyed by shareholders, and the Board do not therefore propose to recommend, in the present case, that this be done.

In order to meet as far as possible the wishes of option holders who are desirous of participating, the Central Mining and Investment Corporation have been approached, and the directors of this Company are authorised to state that in the event of the scheme being sanctioned by shareholders, the Central Mining and Investment Corporation, Limited, will be prepared to receive applications for debentures from Modderfontein East, Limited, Option Holders, and will thereupon themselves apply, as shareholders of the Modderfontein East, for the amount of such applications, limited to the amount to which the Central Mining and Investment Corporation are entitled,

viz., approximately £20,000, and will allot such debentures at cost price (i.e. par) to the applicants. Should the applications from option holders for debentures, as above, exceed the pro rata to which the Central Mining and Investment Corporation are entitled, the Corporation will apply for their full pro rata and will allocate their full allotment amongst the applicants at cost price, pro rata to the amounts applied for, provided that no applicant shall receive more than £500 of debentures.

The following conditions shall have effect in respect to the offer of the Central Mining and Investment Corporation, viz:—

(1) Applications by option holders must reach the office of the Central Mining and Investment Corporation, 1st Floor, Corner House, or P.O. Box 149, Johannesburg, on or before the 17th June, 1919, after which date no application will be considered.

(2) Applications must be accompanied by Bankers' draft or cheque at par on Johannesburg for the full amount of debentures applied for.

(3) Refunds will be made of any amounts deposited by applicants that cannot be satisfied by allotment of debentures at par.

The Central Mining and Investment Corporation, Ltd., writes as follows to the Press:—

Sir,—Our attention has been drawn to a circular issued by the Shareholders' Protection Association, Ltd., to certain shareholders of the Modderfontein East, Ltd. The circular contains numerous inaccurate and misleading statements, which are likely to cause shareholders to believe that this Corporation seeks to deprive them of their property by means of the debenture issue proposed to be made by the Company. The facts of the case are as follows: The *whole issue* of debentures is offered by the Modderfontein East Company to *shareholders, without any restriction as to the amount of debentures which they may apply for*, as set forth in the circular issued by the Company; and the issue is guaranteed by this Corporation free of cost to the Company. In addition, as has already been announced in the Press, this Corporation has offered—in order to meet Modderfontein East Option holders who may wish to participate in the debenture issue, as far as possible—to allow them to take up at cost price the whole of the debentures which this Corporation may be entitled to subscribe for as shareholders in the Modderfontein East Company. These facts speak for themselves.

PERSONAL.

Mr. L. A. Womble, formerly manager of the Geduld, is on a visit to the Rand from the Congo.

* * * *

Mr. I. Kenneth Jardine has returned to Johannesburg after two years' active service in France with the Royal Engineers.

* * * *

Colonel Cooper, R.E., formerly of the Ferreira Deep mine, is on a visit to Johannesburg preparatory to taking up an appointment of assistant managing director of the Mozambique Company at Beira.

German Cargo at Lourenco Marques.

A mineral cargo at Delagoa Bay, amounting to about 8,000 tons, from the former German steamers "Essen" and "Kronprinz" has not been sold owing apparently to high reserve price. The Customs authorities now announce another auction sale, when the former reserve will be reduced 50 per cent. The storage and other charges amount to practically £3,000 sterling, excluding Customs, while 4 per cent. will be added to the sale price for the expenses of the sale.

ASSAYER & ANALYST—Position Wanted.

Advertiser has had 10 years' experience as chief Assayer and Analyst on a base metal mine, also done a lot of sampling. Certificated, married, and had 18 months in Flanders.

Reply—ANALYST,

"S.A. Mining and Engineering Journal,"

Box 963, Johannesburg.

Natal Land and Colonization.

During the past year the sales of land by the Natal Land and Colonization Company fell from 2,831 to 2,068 acres, leaving an unsold balance of 76,608 acres. The total unrealised profit at the close of the year amounted to £24,505, as against £26,086. Holders of debentures for £13,850 accepted the company's offer of exchange into War Loan and Bonds. The net profit for the year increased by £5,550, to £28,028, and the Ordinary dividend, which twelve months ago was raised from 5 to 5½ per cent., is to be advanced to 7 per cent., less tax, and the carry-forward will be slightly larger at £28,165.

Kimberley Water Works.

For the past year the working account of the Kimberley Water Works Company exhibits a profit of £27,372, or about £2,000 more than that of 1917. A sum of £515 has been provided for depreciation and £1,600 for debenture interest, while £9,507 is written off construction. The Ordinary dividend is to be 5 per cent., free of tax, for the fifth consecutive year. The consumption of water for the year was 206,359,500 gallons, as compared with 202,506,100 gallons during 1917. The rainfall for the year was 19.53 inches, as against 15.20 inches for 1917. The company's business shows better results than in 1917, and enables it to record the best year since pre-war days.

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Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Land Values, Settlers and Real Estate.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I am not sure whether this communication should be addressed to your publication or one of the farm papers; however, I understand that your journal is one of the few independent papers in the country, and you would be prepared to open your columns to the public to express their grievances. I have no particular grievance of my own, except that I see many difficulties about permanently settling here, as I find land in this country is extremely expensive and there is an inflated valuation put on all ground whether for farming, for an orchard, or even a suburban plot on which to build a house and live. In view of the backwardness of the country, as compared with Canada, Australia or New Zealand, can you inform me why the price of land is so high? Your markets are limited to one or two ordinary sized towns, and there is not yet proper provision made to export the small quantity of food-stuffs which this country produces. How, therefore, can the people of South Africa ever expect to attract settlers here; no land is prepared for them, and from what little I have seen you have a very unsympathetic Government. What inducement is offered to a British settler? I notice that the Minister of Lands announced in the Assembly that the Government had purchased the farm Gaba Park in the Woodhouse district for £24,095. The farm is about 3,000 morgen in extent, so that the price paid is £8 per morgen. Who was the lucky seller? Land must have risen pretty considerably in that district since I was in that part. However, the Government has bought for a good purpose, as I see that the property is to be used as a training and probationary farm for persons desirous of becoming settlers. I take it that this means settlers from overseas and will not necessarily be limited to the sons of the "older inhabitants" of this country of contradictions, strikes and riots. Will the Government at some time publicly announce what quantity of ground on Gaba Park is fit for cultivation, at the price paid it all ought to be ploughable, and will British settlers, not born out here, have an equal opportunity given them of being trained? Are the exorbitant land values due to the fact that the land is locked up and held by conservative Dutch people and large wealthy financial corporations who hold for high prices? If this is the case there should be a stiff land tax imposed and, if it were possible to do so, legislation introduced to expropriate the land. In most British Colonies the Governments prepare the land and build farm-houses and then get out suitable settlers who are helped by the Government until they get on to their legs. These settlers, of course, are the right type of person and they *do* work and improve their properties and do not expect to be perpetually spoon-fed and helped by the Government. I see very little mentioned in the debates in the House of Assembly, except casual remarks, as to what land settlement the Government intends to introduce so as to settle our returning soldiers on farms. Now take the value of the stands or land in and around Johannesburg. To whom does the land belong, what did these people pay for it, and how much are they asking the public to pay

them? I have been informed, by men of knowledge and standing, that the rich financial houses purchased the land in the early days of Johannesburg for something like 10s. or 20s. per morgen and are now selling this for £500 to £250 per acre. All the ground is locked up and the unfortunate inhabitants are compelled to pay these inflated and wicked prices because there are no town lands that the Municipality could sell to them. Just imagine the profits that these people accumulate and see the rate of interest on their investments. For an outlay of £1 or 10s. they charge £500 to £250. If the Provincial Council need money so badly why do they not turn their attention to the improved land around Johannesburg and clap a decent tax upon the valuation made by the owners themselves? I would suggest to let these people off paying the income tax and notify them that as they are preventing the expansion of the town by their grasping methods they must be taxed upon their valuable land holdings. I trust this will have the attention of the Administrator and that steps be taken to appoint a large number of valuers throughout the Transvaal and then go straight ahead with a land tax. If this is done in a proper and determined manner we will soon find that the settlers will be able to acquire farms at a reasonable price, and the unfortunate urban resident will be able to buy a little more ground than a 50 ft. by 100 ft. stand, or even an acre at something like its true value. There is nothing to warrant people being such fools as to invest money, at the enormous prices now asked for real estate, in this town. As the mines around Johannesburg pinch out there will be less demand for both houses and ground, and those misguided people who put their hard-earned savings into house property, at the present inflated values, are going to sadly regret their investments within the next year or two at the outside. I should say, in conclusion, that you people of Johannesburg are all too optimistic, and it is up to the Press to put the public on their guard and sound a note of warning to those weak creatures who so glibly tell one that they have bought two houses and will get £25 a month rent for each and are thus provided for against old age. Your journal knows quite well that the Central Rand is pinching out and that it is only natural that real estate in and around Johannesburg must come down in value. This is the time to sell but not to buy.—Yours, etc.,

BRITISH SETTLER.

[The fact that Johannesburg is so badly off in regard to town lands is, we believe, due to the Kruger Government, which refused to consider the needs of the town in its early days. The people who speculated successfully in land cannot be blamed for being businesslike.—Ed.]

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Modderfontein Deep Levels, Ltd.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—*Re "Purchase of Enemy Shares,"* we are directed to request you to publish the following:—Under the provisions of the Trading with the Enemy Act, 1916, the Modderfontein Deep Levels, Ltd., has purchased from the Custodian of Enemy Property for the Union of South Africa approximately 70,000 shares, being enemy-held shares in the Company vested in the said Custodian, at £6 12s. 6d. per share. Of these shares, 23,810 will be retained for distribution amongst shareholders as a portion of the next dividend. The remaining shares will be offered at the purchase price to shareholders of the Company (not being subjects of any State which has during the recent hostilities been at war with Great Britain) in the proportion of one share for every ten shares held, under the guarantee of the Union Corporation, Ltd., which will receive as consideration therefor a cash commission of 5 per cent. on the purchase price of the shares so offered. A circular in connection with the matter will be issued to shareholders shortly.—Yours, etc.,

UNION CORPORATION, LTD., Secretaries,
per J. W. C. HAWTHORN.

Johannesburg,
2nd May, 1919.

Geduld Proprietary Mines, Ltd.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—*Re "Purchase of Enemy Shares,"* we are directed to request you to publish the following:—Under the provisions of the Trading with the Enemy Act, 1916, the Geduld Proprietary Mines, Ltd., has purchased from the Custodian of Enemy Property for the Union of South Africa approximately 250,000 shares, being enemy-held shares in the Company vested in the said Custodian, at £2 0s. 0d. per share. Of these shares, 85,185 will be retained for distribution amongst shareholders as dividend. The remaining shares will be offered at the purchase price to shareholders of the Company (not being subjects of any State which has during the recent hostilities been at war with Great Britain) in the proportion of two shares for every eleven shares held, under the guarantee of the Union Corporation, Ltd., which will receive as consideration therefor a cash commission of 5 per cent. on the purchase price of the shares so offered. A circular in connection with the matter will be issued to shareholders shortly.—Yours, etc.,

UNION CORPORATION, LTD., Secretaries,
per J. W. C. HAWTHORN.

Johannesburg,
2nd May, 1919.



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Bulawayo and Salisbury.

The Cement Gun.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—A short paragraph in your last issue, *re* the Cement Gun, is very interesting. Mention is made of its use by the mines for brattice work instead of bricks. It has occurred to me that such a practice might be of great value in coal mining. Stoppings built or treated by the cement gun appeal to me as being very air tight and therefore more efficient. If you could arrange for a short account of the Gun, its uses, costs, and how the brattice work mentioned is constructed, I am sure that others as well as myself will find it of interest and mayhap of value. Thanking you.—Yours, etc.,

W. J. HOSKING-IVEY.

Burnside Colliery, Glencoe Junction,
May 1st, 1919.

[We hope to print the desired particulars in an early issue.—Ed., *S.A.M. & E.J.*]

Mining Companies in the Supreme Court.

Application was made last week in the Rand Division of the Supreme Court by the Rand Mines, Ltd., and the Crown Mines, Ltd., for an order directing Mr. F. J. Steynberg to institute an action against the applicants for the purpose of establishing his claim, if any, to the farm Mooifontein No. 14, in the mining district of Johannesburg, or failing his doing so, an order condemning the respondent to perpetual silence in respect of his alleged claim to the farm and mining rights. Pending the decision of the action the applicants asked for an interdict restraining the respondent from entering upon the farm and publishing any notices thereon, and from publishing in the daily Press any notices asserting his claim to the farm or its mining rights. There was no opposition and the application was granted.

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transactions of any of its customers.

THE WEEK IN THE SHAREMARKET.

Better Tone—Limited Business—Fall in Crown and South-West Diamonds.

No business was done at the opening on Saturday, only a few tentative buying offers being made. Prices at the call unexpectedly firmed up. Geduld Props., Modder Deeps, Government Areas, Pretoria Cements and Springs all showed distinct advances. The market was quiet on Monday morning. Springs and Transvaal Consolidated Lands were both better. On the other hand Geduld Props. and African Farms were both weak. Alkalis dropped to 20s., at which 100 were sold. After the call Modder Easts advanced to 19s. 9d. sales and buyers. During the day Springs fluctuated considerably, at one time reaching 50s. 9d., and from thence back to 49s., closing at 49s. 6d. At the opening on Tuesday the only sales were Modder Deep at £7 12s. 6d. and Koodoos at 22s. Prices on High 'Change showed little variation from the previous day's record. Springs Mines recovered to 50s. 3d., but West Springs and Crown Diamonds were easier. In the afternoon Springs had another setback to 49s. 3d.—49s. 9d. The early business on Wednesday was limited to three sales—Geduld Props. 45s. 9d.; Government Areas, 90s. 6d.; and South-West Diamonds, 73s. 6d. and 75s. At the call there was again very little change. Modder Easts were somewhat harder. Brakpans came weak at 60s. sales, and Crown Diamonds went for 20s. 6d. The only sales at the opening on Thursday were in Modder Easts at 20s. 1½d. and Union fives at £101 15s. The call showed firmness without change in the better class stocks, with continued weakness in Crown Diamonds and African Farms. Alkalis went better and there was a big buying order for Frank Smiths. Sales were booked in every one of the Modderfontein stocks, including the options. The latter have not improved to any appreciable degree in view of the offer of the Central Mining of a distribution of £20,000 worth of debentures, which, taking into consideration the fact that they will be convertible into shares at par, should be worth £120. In outside stocks, the following sales were recorded: Theron Diamonds, 20s. to 22s.; Sakalavas, 8s. 6d. to 8s. 3d.; Phoenix, 1s. 3d.; Koodoos, 22s. to 21s.; Union Tins, 5s. 3d.; South-West Diamonds, 77s. 6d. down to 67s. 6d. sellers. Buyers and sellers: New Farms, 1s. 6d. buyer; Makganyene Diamonds, 40s. buyer; Compound Diamonds, 2s. 6d.—3s.; Mauss Syndicate, 25s. seller; Monteleos, 11s. 3d.—13s. 6d.; Henderson's Options, 11d. seller.

Crown Diamonds had a bad setback on Thursday afternoon, at one time falling as low as 18s., but closed at 19s. 3d. The only reason that was given on 'Change being the very obvious one of more sellers than buyers. At the opening on Friday there was considerable buying of Modder East at 21s. Sales of Frank Smiths at 4s. 9d., 4s. 10d. and 4s. 11d.; of Crown Diamonds at 19s. 9d. and 20s.; and South Van Ryns at 9s. 3d. At the call the following changes in price were noted. Sales: Bush Tins, 1s. 6d.; Crown Diamonds, 20s.; Frank Smiths, 4s. 10d. and 4s. 9d.; Glynn's Lydenburgs, 20s.; Government Areas, 90s. 6d.; Leeuwpoots, 21s. 9d.; Modder Easts, 21s. 1½d.; New Eras, 10s.; Princess, 2s. 3d.; South Van Ryns, 9s. 3d.; Sheba, 1s. 6d.; Alkalis, 20s.; Springs, 49s. 3d.; West Springs, 21s. 6d.; Chartered Co., 19s.; Union Fives, £102. Buyers and sellers: Apex, 7s., 7s. 3d.; Brakpans, 61s., 62s. 6d., ex London; Coronation Coal, 56s., 60s.; Glencoe, 6s., buyer; Hume Pipes, 29s. 6d., 30s.; Lace Props, 19s., seller; Modder B., £7 16s. 6d.—£7 19s. 6d.; Modder Deep, £7 13s.—£7 15s.; New Eland, 26s.—28s.; Nourse Mines, 13s.—13s. 6d.; Premier Preferred, £7 10s. seller; Pretoria Cement, 67s. 6d.—68s. 6d.; Randfontein Deep, 4s. 3d.—4s. 9d.; Rooibergs, 4s.—1s. 3d.; Sub Nigels, 20s. 6d.—21s.; Van Ryn Deep, 68s. 3d.—68s. 6d.; Village Deep, 14s. 3d.—15s.; Wit. Deep, 13s. 3d. buyer.

	Fri., 2nd.	Sat., 3rd.	Mon., 5th.	Tues., 6th.	Wed., 7th.	Thurs., 8th.
African Farms . . .	13 0*	13 3*	13 3	13 6	13 0	13 1*
Anglo-Amr. Corp. . .	—	20 6*	—	21 0*	21 0*	21 0*
Apex Mines	7 3*	7 0*	7 3	7 0*	—	6 9*
Bantjes Cons.	2 2	2 1*	2 1*	2 1*	2 2*	2 2*
Brakpan Mines	64 0†	—	64 0†	63 0†	60 0	60 0*
Breyten Collieries . .	—	11 6†	12 0†	—	—	12 0†

	Fri., 2nd.	Sat., 3rd.	Mon., 5th.	Tues., 6th.	Wed., 7th.	Thurs., 8th.
Bushveld Tins	1 7	1 6*	1 7*	1 7	1 7*	1 7
Cassel Coals	22 6*	—	22 6*	22 6*	22 6*	—
Cinderella Cons. . . .	3 3*	3 6	3 3*	3 6*	3 6*	3 3*
City and Suburbans . .	—	5 9	5 9*	—	5 9*	5 6*
City Deeps	52 0†	52 0†	50 0*	—	—	52 0†
Clydesdale Collieries .	24 0*	—	24 0*	24 0*	23 6*	22 6*
Con. Investments . . .	25 0*	—	25 0*	25 0*	25 0*	25 0*
Con. Langlaagtes . . .	17 3	17 3	17 0*	17 3*	17 0*	17 3*
Con. Main Reefs . . .	9 6*	9 9*	9 9*	9 9*	9 6*	9 9*
Con. Mines Selection .	22 0*	22 6*	—	23 0*	23 0*	23 0*
Coronation Collieries .	52 6*	52 6*	55 0*	55 0*	55 0*	55 0*
Coronation Freeholds .	1 6	1 5*	1 6	1 5*	1 6	1 7†
Crown Diamonds	21 9*	21 6*	21 9*	21 6	20 6	20 3*
Daggafontein Mines . .	22 0*	22 3*	22 6	22 6*	23 0	22 9
East Rand Coals . . .	2 4*	2 4*	2 4*	2 4*	2 4*	2 4*
East Rand Deeps . . .	0 10*	—	0 9*	0 9*	—	—
East Rand Minings . .	17 0*	—	17 0*	17 0*	17 0*	—
East Rand Props. . . .	5 9	6 0*	6 1	6 1	6 1*	6 0*
E.R. Debentures	—	—	£62*	£62*	£62*	£62*
Eastern Golds	1 3*	1 3*	1 3*	1 5†	1 5†	—
Frank Smith Dmds. . .	3 10*	3 10*	3 10*	3 11	4 1	4 5
Geduld Props.	44 7½	46 3	45 0*	45 6	45 6	45 9
Ginsbergs	1 3	1 0*	1 0*	1 3*	1 0*	1 3*
Glencains	1 0*	1 0*	1 0*	1 0*	1 0*	1 0*
Glynn's Lydenburgs . .	18 0*	20 0†	—	—	22 0†	—
Govt. Areas	89 6	89 0	89 0*	90 0a	90 3*	90 9*
Jhb. Br. of Ex.	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Klerksdorp Props. . . .	1 1*	1 1*	1 1*	—	1 1a	1 1*
Knight Centrals	7 11*	7 11	7 10*	7 9*	7 9	7 9
Lace Props.	—	19 0*	19 0*	19 3*	19 0*	19 0*
Leeuwpoot Tins	22 6*	23 0†	23 0†	22 6†	22 6†	22 0
Luipaardsvlei Estate .	—	—	1 3*	1 6*	—	—
Lydenburg Farms . . .	8 6	8 9†	8 4*	8 4*	8 3*	8 4*
Meyer and Charltons . .	85 6*	86 0*	86 0*	—	86 0*	—
Modder B.'s	162 0a	158 6	157 6*	160 0a	155 0*	155 0
Modder Deeps	148 0*	152 6	151 0*	152 6	150 6*	152 0
Modder Easts	19 6*	19 3*	19 4*	19 9*	20 3	20 4½
Do. Options (3 yrs.) . .	3 1*	3 0*	3 1*	3 3*	3 6	3 5
Do. Options (4 yrs.) . .	4 6*	—	4 3*	4 3*	4 6*	4 9
Hume Pipes	29 0*	30 0a	30 0	29 9	28 9*	29 0*
Natal Navig. Colls. . .	—	22 6*	22 6*	22 6*	—	22 6*
National Banks	300 0*	300 0*	300 0*	300 0a	300 0*	300 0*
New Boksburgs	1 6*	1 9†	1 9*	1 0*	1 2*	—
New Eland Dmds	26 0*	27 6	28 0†	26 6*	26 6*	29 0†
New Era Cons.	9 6*	9 6*	9 8*	9 9*	9 0*	10 0*
New Geduld Deeps . . .	4 7*	4 6*	4 6*	4 6*	4 6*	4 7*
New Kleinfonteins . . .	11 0	11 0†	11 0†	10 6*	10 0*	10 6
New Modders	—	—	£26*	£26*	£26*	£26*
New Unifeds	4 0*	—	3 6*	4 0†	4 0†	4 0†
Nourse Mines	14 0†	13 9†	—	13 9†	13 6†	13 6†
Pretoria Cements . . .	67 0*	69 0	67 6*	69 0*	67 6*	69 0†
Princess Estates	2 3	2 2	2 1*	2 0*	2 0*	2 2
Rand Collieries	3 0*	3 3*	3 3*	3 3*	3 0*	3 0*
Rand Nucleus	—	1 6*	—	1 6*	1 6*	1 6*
Rand Select. Corp. . . .	76 0†	—	76 0†	76 0†	76 0†	76 0†
Randfontein Deeps . . .	4 0*	—	5 0†	4 6*	4 6*	4 6*
Randfontein Estates . .	14 9*	14 9*	14 10*	14 9*	14 10*	14 9*
Roberts Victors	—	14 0b	13 0*	13 6*	—	—
Rooibergs	—	5 9	5 9*	5 9*	5 9	5 0*
Ryan Nigels	—	3 3*	3 3*	3 3*	3 3*	3 3*
Shebas	1 8†	1 6*	1 9†	—	1 6*	1 6*
Simmer Deeps	1 6*	1 6*	1 6*	1 6*	—	1 6*
S.A. Breweries	33 0*	33 0*	33 6*	34 0*	34 0*	34 0*
S.A. Lands	6 0*	6 0*	6 0*	6 1	6 1	6 0*
Springs Mines	47 0	47 9	49 6	50 3	50 0	50 3
Sub Nigels	21 0*	21 0*	21 0*	21 3	21 0*	21 1
Swaziland Tins	20 0†	—	20 0†	20 0†	20 0†	20 0†
Transvaal Lands	—	26 0*	—	27 6*	27 6*	27 6*
Trans. G.M. Est.	13 9*	14 0	14 0*	14 0*	14 10*	14 0†
Van Ryn Deeps	67 3*	67 0*	67 3*	68 0	68 0	68 0*
Van Dyks	2 9*	—	2 9*	2 6*	2 9*	3 0*
Village Deeps	15 0†	12 6*	12 0*	12 6*	—	14 0*
Western Rand Estates .	1 7*	1 8*	—	—	1 9*	1 6*
Witwatersrands	17 6*	—	17 6*	17 6*	—	—
Wit. Deeps	15 0	—	15 0†	13 6*	13 6*	13 6*
Wit. Townships	—	—	—	—	—	24 0†
Wolbaters	2 6	2 0*	2 1*	2 0	2 0*	2 0
Zandplaats Tins	10 1*	10 5*	10 9†	10 6*	10 9†	10 6*
Union 5 per cents. . . .	£100†	£101*	£101†	£101*	£101*	£101†
New State Mines	23 0*	23 0*	23 3	23 0*	23 0*	23 0*
South Van Ryns	8 3*	8 0*	8 3*	8 9*	9 0*	8 9a
S.A. Alkali	21 3†	—	20 0	20 0†	20 0	21 0*
Tweefontein Collieries .	22 9*	—	—	—	22 6*	23 0
Union Corp	15 6*	15 6*	15 6*	15 6*	15 6*	15 6*
West Springs	21 6	21 6*	21 9*	21 9	22 0	21 0
Do. Options	7 9	—	7 0*	6 6a	7 0*	—

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INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- May 20.—S.A. Land and Exploration Co., Ltd.—Sixteenth Ordinary General Meeting, 38, Meischke's Buildings, at 12 noon.
- May 23.—West Springs, Ltd.—Second Ordinary General Meeting, at 10.30 a.m.
- May 23.—Daggafontein Mines, Ltd.—Fourth Ordinary General Meeting, at 11 a.m.
- May 23.—Springs Mines, Ltd.—Tenth Ordinary General Meeting, at 12 o'clock.
- May 23.—Brakpan Mines, Ltd.—Sixteenth Ordinary General Meeting, at 2.30 p.m.
- May 23.—Rand Selection Corporation, Ltd.—Twenty-seventh Ordinary General Meeting, at 3.30 p.m.
- May 23.—New Era Consolidated, Ltd.—Seventh Ordinary General Meeting, at 4.30 p.m.
- May 27.—New Primrose G.M. Co., Ltd.—Annual Ordinary General Meeting, at 12 o'clock.
- May 27.—New State Areas, Ltd.—Second Ordinary General Meeting, at 12.30 p.m.
- May 27.—New Unified Main Reef G.M. Co., Ltd.—Twenty-first Ordinary General Meeting, at 12.15 p.m.
- May 27.—Ginsberg G.M. Co., Ltd.—Twenty-fourth Ordinary General Meeting, at 11.30 a.m.
- May 27.—Glencairn Main Reef G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 11.45 a.m.
- May 28.—Consolidated Langlaagte Mines, Ltd.—Sixteenth Ordinary General Meeting, at 10.40 a.m.
- May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.—Ninth Ordinary General Meeting, at 3.30 p.m.
- May 28.—Langlaagte Estate and G.M. Co., Ltd.—Twenty-eighth Ordinary General Meeting, at 12 o'clock.
- May 28.—Randfontein Estates G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 2.45 p.m.
- May 28.—Van Ryn Deep, Ltd.—Fourteenth Ordinary General Meeting, at 3.10 p.m.
- May 28.—Witwatersrand G.M. Co., Ltd.—Annual Ordinary General Meeting, at 11.30 a.m.
- May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.
- June 18.—Crown Mines, Ltd.—23rd ordinary general meeting, 11 a.m.
- June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
- June 19.—Durban Roodepoort Deep, Ltd., at 12 noon.
- June 20.—City Deep, Ltd., at 12 noon.
- June 20.—Robinson G.M. Co., Ltd.—Twenty-ninth Ordinary General Meeting, at 2.30 p.m.
- June 21.—Village Deep, Ltd., at 2.30 p.m.
- June 21.—Geldenhuis Deep.—Twenty-fourth Ordinary General Meeting, at 11 a.m.

Surplus War Material.

Referring to the sales of surplus war material in England, a Home paper states that the electrical section of the Disposal Board are about to place on the market a number of interesting articles little known outside naval and military circles. The daylight signalling lamp, which was invented to replace the heliograph—an article dependent for its effectiveness on sunlight—is one example. Several hundreds of these are for disposal. The apparatus consists of a cylindrical lamp something of the shape of a motor car sidelight or a bicycle lamp, equipped with a powerful reflector, strong twelve-volts dry battery, and a Morse tapper, the whole enclosed in a teakwood box and carried by strong leather straps. Each of the parts of which it is composed should, says an official notification, be of interest to some section of manufacturers. Then there is the electric mine exploder—a delicate relay similar to the relay used in voltage alarms, though, if possible, more sensitive. Sound waves produced by the propeller of an approaching submarine actuate the diaphragm which operates the relay, and sets the necessary current in motion, causing the mine to explode. Some two to three thousand of these await disposal. Their adaptability to peace time purposes is a matter left to the enterprising manufacturer.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Business Better—The Budgets and Trade Prospects—Trend of Affairs—Oils and Colours—Shipping—Timber and Bricks.

It is quite pleasing to be in a position to state that the tone of business is altogether better. Obviously after a lengthened strike there are still some weak points to be rectified, as the builders have not resumed their stride yet. The S.A. Labour Conference at Bloemfontein is very enlightening in regard to the various views taken by the orators. The Johannesburg Federation Secretary has from time to time reminded them of the mines closing down, which seems to have had a calming influence. The colour bar is a very difficult nut to crack, as the Cape delegates and those from Natal are not altogether in accord with the Transvaal delegates. There are, however, signs that common sense will ultimately prevail, and therefore the business people are taking it as a good omen that peace in labour circles will ultimately succeed. Again, the filling up of the Johannesburg Council by the elections on Wednesday to its full strength, thus giving the Labour Party practical control of Johannesburg, is looked upon very calmly in the hope that giving them responsibility may have the effect of showing them the other side of the picture and their moral obligation to the whole of the community. Again, the Government are arranging for a conference of employers and employed, which must have a good effect.

THE BUDGETS AND OUR PROSPECTS.

The British budget is a marvellous production from a purely financial view. The special feature so far as South Africa is concerned is the granting of Imperial preference to the Dominions and Colonies, thus enabling us to export tobaccos, fruits, wines, jams, teas, meat, maize and other produce on the most favourable terms. If we have preference, that means a protective duty in Britain against other parts of the world, so breaking up the free trade tradition. Naturally free trade will figure largely in such a manufacturing country as Britain, and no doubt the new Act on the subject will be made very elastic. Our own Budget is also very commendable, as for the year ending 31st March it shows an excess over the Estimates of £2,612,608. Such things must attract a large number of people, with a certain amount of money, to our great country. Then there are the ranches, which will be an ever-growing proposition, to say nothing of the gold, diamonds and base metals.

THE TREND OF AFFAIRS.

Business on the Commercial Exchange was better, as quite a fair demand sprang up from the railways, municipalities, Transvaal and Natal coal fields and outside propositions. It is also surprising the quantities of small sorting-up orders that are received from all parts of South Africa, including the South-West and the former German East Protectorate. The fly in the ointment is that all our gold mines are decidedly reducing their stocks, and according to an official statement this drastic measure will be continued for some months to come, and what seems to be of importance is that the co-operative yards are carefully scrutinising the information gathered by the late buying office, thus enabling them to requisition the various mines where any surplus exists, so that such orders go direct from the mines to other mines requiring the stores or spares,

drills, etc. Naturally, this means so much less business for the Commercial Exchange in connection with the mines. However, it is said that more orders for sorting-up lines and things hardly worth the doing have come in more freely this month than practically any time since the Armistice. The better feeling since the strike was settled has become noticeable and also the speculative element is becoming less and less as regards oils and merchandise coming into the market. It is said that most of the oils, turps, white lead and such like have been taken over from the limited liability company now in liquidation. This will clear the depressing cloud for stocks on hand and more especially those to arrive. There are, however, a few others who will have to realise through financial reasons, both those who can carry and see it out will undoubtedly realise a profit, as against those who have to sell a trifle below landed cost. It is reported that a lot of fresh contracts, involving very considerable building work, are about to be given out. The auctioneers' sales in the property line, as well as estate agents', have come on very nicely, and when attending a sale on Tuesday the large mart was crowded and prices were quite on the big side; the auctioneer stated that all reserves had been exceeded. This no doubt is in consequence of the extraordinary demand for residential places, and perhaps on account of the quieter outlook.

OILS AND COLOURS.

The price of oils and colours is advancing both in America and Britain; turps in America are much higher, according to the latest cable advices, but here they are somewhat flat as stocks have arrived rather freely and so accumulated. And it is just like Johannesburg that when a little of anything comes upon a heavy market everybody then unduly rushes in to sell. Turps have been done as low as 65s. a case, although the normal quotation is 75s. Linseed oil is also stagnant, although there may be signs of a slight revival. The recognised price is from 11s. to

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12s. per imperial gallon for the best, but others have been done at about 9s., when a line had to be cleared with a certain amount of urgency. A few consignments of the best variety of American salad oil were quickly absorbed at 130s. to 140s. a case, but as more is on the water values are expected to recede somewhat. South American barcelona salad is 120s. and African nut oil is 70s. a case. Olive oil is 20s. a gallon and very firm at that. Castor oil, ordinary mining, 65s. to 67s. 6d.; second quality, 45s. to 50s.; medicinal, 90s.; lubricating and engine oils, 40s. to 42s. 6d.; cylinder, 42s. 6d. to 45s.; lard oil, 85s.; whale oil, 6s. 9d. to 7s. a gall.; neatsfoot oil, 10s. a gall.; paraffin, 23s. 6d. to 24s. a case; motor oil, 6s. 6d. to 8s. 6d. a gall. The latter is somewhat scarce with several of the distributing houses, but there is plenty to meet the requirements during the present month when other consignments are expected to arrive at the coast. The last cable quotation for turps from London is £95 per ton, equalling 86s. a case, which is dearer than in Johannesburg, representing 10s. a gallon in London and 7s. a gallon in Johannesburg. Plate and window glass is very plentiful and a fair amount of business is being done in both. The manager of a distributing house stated that it was pleasant again to be busily engaged in oils, colours and glass since the strike terminated.

PARAFFIN SHALE AT WAKKERSTROOM.

Some time ago it was mentioned in these notes that oil shale of payable quality had been found at Wakkerstroom. It appears that the initial small syndicate came to grief through lack of suitable machinery, but now a strong syndicate has been formed for that and the Utrecht district. It is understood that support for this syndicate has been forthcoming from a Johannesburg and Delagoa Bay Company, therefore there are now very good prospects of substantial success. Work will at once be undertaken at Wakkerstroom and the crude oil shale will be quickly

exploited. Whether it will be sold to a Johannesburg firm in its crude state remains to be seen, but the proposition, it is said, has great probabilities both for coal and oil. It goes without saying there is an unlimited market for anything of a paraffin oil nature. The syndicate is in negotiation with an oversea firm for the latest paraffin extraction plant.

SHIPPING.

According to an authority on the question of shipping, it is stated that the American Government has put four steamers on the New York-South African line and similar rates to the ordinary cargo steamers are charged; hence the Government are coming into trade competition, which is altogether a new departure. It is recognised that during the latter period of the war a great rush was made to build ships in America, and now that Government has at least 120 boats at their disposal, for which they have no use, and naturally they hope to get some revenue as a result of this

Transvaal Gold Mining Estates, LIMITED.

(Incorporated in the Transvaal.)

NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-second ORDINARY GENERAL MEETING of Shareholders for the year ended 31st March, 1919, will be held in the Board Room, The Corner House, Johannesburg, on WEDNESDAY, 24th SEPTEMBER, 1919, at 3 p.m., for the following business:—

1. To receive and consider the Balance Sheet and Accounts for the year ended 31st March, 1919, and the Reports of the Directors and Auditors.
2. To confirm the appointment of Mr. M. Honnet as a Director of the Company in place of Sir E. A. Wallers, resigned.
3. To elect Directors in the place of those retiring in accordance with the provisions of the Company's Articles of Association.
4. To determine the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
5. To transact any other business which may be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

The Share Transfer Books of the Company will be closed from the 18th September to the 24th September, 1919, both days inclusive.

Holders of Share Warrants who desire to be present or represented at the Meeting shall produce their Share Warrants (or may at their option deposit same) at the places and within the times following:—

- (a) At the Head Office of the Company, in Johannesburg, at least 24 hours before the time appointed for the holding of the Meeting;
- (b) At the London Office of the Company, No. 1, London Wall Buildings, London, E.C. 2, at least 30 days before the date appointed for the holding of the Meeting;
- (c) At the Credit Mobilier Francais, 30 and 32, Rue Taithout, Paris, at least 30 days before the date appointed for the holding of the Meeting. Only Share Warrants bearing French stamps can be produced or deposited at the Credit Mobilier Francais;

and shall otherwise comply with the "Conditions as to the issue of Share Warrants" now in force.

Upon such production or deposit a certificate with proxy form will be issued, under which such Share Warrant Holders may attend the Meeting either in person or by proxy.

By Order of the Board,

TRANSVAAL CONSOLIDATED LAND & EXPLORATION COMPANY, LTD.,

Secretaries,

Per C. L. READ,

Head Office:

The Corner House, Johannesburg,
5th May, 1919.

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hurried expenditure. They have a scheme on hand, but not yet passed the Legislature, to let these boats out to American citizens on a purely American register at a charge of 25 per cent. on actual cost. The valuation has to be taken at the end of each year, when payments and other matters have to be re-arranged, which it is to be hoped will place all the surplus American shipping under the control of American citizens. British shipping is coming out very freely, more especially to bring out the repatriated troops, but the peculiarity is that as a general statement the ships in question cannot get anything like full cargoes to fill up the space available for such. This is partly because the merchants from here stopped or slowed down since the Armistice in their indents from Great Britain on account of the high prices, and also for a similar reason the shippers failed to send out cargoes on their own account. This must of necessity assist the homeward voyage of passengers wishing to go, but as regards getting the palatial mail boats into their old form, that will take a long time, more particularly as it is said that the British Government are still holding their hand over some of the S.A. mail boats until peace is signed.

TIMBER AND BRICKS.

The price of timber is just about the same, with, however, a firmer tendency on account of the extra demand. Deals are 1s. 6d., floorings 8½d., and ceilings 6½d. per foot. Men who should know cannot understand why timber is still so comparatively cheap, as prices are hardening in the Baltic and freights are the same—not lower. The only feasible explanation as to why genuine holders have to lose money is the speculative element at the coast being much overloaded. The demand for bricks, lime and cement has been fairly good during the past week. Mixed stock bricks have ruled at 60s.; all blue at 65s., delivered on the job; wire cuts and pressed bricks at 85s. to 90s. Builders are complaining of the scarcity of bricklayers and plasterers. A leading broker in the trade informed us that in response to an advertisement inserted for plasterers he did not receive a single reply. This tends to show that during the strike period many plasterers (among other tradesmen) left Johannesburg and district for other parts, leaving those remaining to carry on with full hands on resumption of work.

A SOUTH AFRICAN INDUSTRY.

The South African Nitrate and Potash Corporation, Ltd., has advanced an important step by the assistance of the Government of the Union and of the Imperial Government as well. A priority passage has been granted to the consulting chemist, who will arrive about the end of next month. The Imperial Treasury has permitted the sale of shares for working capital in the United Kingdom, and we learn that all offered there have been taken up and more applied for. The first issue offered in South Africa has also been taken up and a new issue is shortly to be made. This new industry will give an exhibition at the forthcoming Agricultural Show at Maritzburg.

Swaziland Tin.

The following are the results of the operations of this company for the month of March, 1919: Concentrate recovered, 32.05 long tons; estimated profit for month (taking tin at £200 per ton), £621.

MINING INSTITUTE.

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RESULTS.—42 Managers' Certificates out of 55 in S.A., and 36 Overseers' Certificates in a recent 12 months; 9 Managers' Certificates (1 conditional) and 80 per cent. successes Overseers', 1919, to date.

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Latest Company Registrations.

- Grand Lodge of Central South Africa of the International Order of Good Templars, 34 Aegis Buildings, Loveday Street, Johannesburg; capital £300.
- Moosa Hassim, Ltd., 42 Market Street, Johannesburg; capital £600.
- Alfred Sedgwick, Ltd., 86a Main Street, Johannesburg; capital £2,500.
- South African Engineer and Electrical Review, Ltd., 202 Stock Exchange Buildings, Johannesburg; capital £1,000.
- Capital Engineering Works, Ltd., 271 Proes Street, Pretoria; capital £15,000.
- Wasgaray, Ltd., 28 Cornelia Street, Troyeville, Johannesburg; capital £1,000.
- Sturrock (Capetown), Ltd., Barsdorf Buildings, Marshall Street, Johannesburg; capital £1,000.
- Goodman Brothers, Ltd., 80 Church Street West, Pretoria; capital £20,000.
- Al. May & Son, Ltd., 57 Avenue Road, Fordsburg, Johannesburg; capital £1,000.
- Joscelynes, Ltd., Ruskin House, Joubert Street, Johannesburg; capital £15,000.
- Cœur de Lion, Ltd., 572 Nineteenth Street, Vrededorp, Johannesburg; capital £50.
- Consolidated Enterprises, Ltd., 140 Exploration Buildings, Commissioner Street, Johannesburg; capital £15,000.
- Cassel Clydesdale (Spring) Gold Mines, Ltd., 1st Floor, Jeppe Arcade, Fox Street, Johannesburg; capital £300,000.
- The Langkuil Settlements, Ltd., 28 and 29 Royal Chambers, Simmonds Street, Johannesburg; capital £500.
- A. M. Minty Stands, Ltd., Main Street, Hartbeestfontein, District Potchefstroom; capital £1,000.
- Scotis (1919), Ltd., 32 Beckett's Buildings, President Street, Johannesburg; capital £1,500.
- Tar, Ltd., 244 Prinsloo Street, Pretoria; capital £2,000.
- Central Garage, Ltd., 222 St. Andries Street, Pretoria; capital £1,000.
- Creswick's Agencies, Ltd., 43 Sacks Buildings, Joubert Street, Johannesburg; capital £500.
- Springs Colliery, Ltd., 404 Consolidated Buildings, corner Fox and Harrison Streets, Johannesburg; capital £16,500.
- Victory, Ltd., 553 Eighteenth Street, Vrededorp, Johannesburg; capital £1,000.
- The H. L. and M. Buildings, Ltd., 36a Grosvenor Chambers, Loveday Street, Johannesburg; capital £15,000.
- Sullivan Conservatorium of Music (Far East), Ltd., 90-98 Sacks Buildings, Joubert Street, Johannesburg; capital £15,000.
- Vereeniging Hotels, Ltd., 50 Oullinan Buildings, Main Street, Johannesburg; capital £4,500.
- Thorne & Griffin, Ltd., Commercial Buildings, Second Street, Springs; capital £2,000.
- Righthouse's Pharmacy, Ltd., corner Main and Central Roads, Fordsburg, Johannesburg; capital £2,000.
- Die Transvaalse Boedel en Eksekuteurskamer, Beperk, 24 Bureaustraat, Pretoria; capital £50,000.
- Yeoville Cinema, Ltd., 17 Bedford Road, Yeoville, Johannesburg; capital £200.

FOREIGN COMPANIES.

- Stienies Diamonds Syndicate, Ltd., care D. Durran, Barsdorf's Buildings, Marshall Street, Johannesburg; capital £30,000.
- Victory Monarch Gold Mining Company, Ltd., care Henry Goodwin, 63 Standard Bank Chambers, Commissioner Street, Johannesburg; capital £75,000.
- English Electric Company, Ltd., care A. Aiken and or J. G. Carter and/or T. S. Adams, 1-9 National Bank Buildings, Simmonds Street, Johannesburg; capital £100.
- The South African Oversea Company, Ltd., care James Mendelson, Lensvelt Buildings, 147 President Street, Johannesburg; capital £1,000.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

- New Abbotts' Mine, Ltd.; Valley Store, Ltd.; Crescent Gold Mining Syndicate, Ltd.; Mann, George & Company (Delagoa), Ltd.; Duncan & Brand, Ltd.; New Abbotts Mine, Ltd.; Klipwolf Syndicate, Ltd.; L. Fatti & Company, Ltd.; The Co-operative Furnishers, Ltd.; Slabbert & Verster, Ltd.; Italian Warehouse Company, Ltd.; R. L. Esson & Company, Ltd.; Witwatersrand Townships, Estate and Finance Corporation, Ltd.; Pretoria Townships, Ltd.

NOTICES OF INCREASE AND DECREASE OF CAPITAL.

- Cawse & Malcolm, Ltd., Johannesburg; from £12,000 to £20,000.
- Franco-Colonial Company, Ltd., Johannesburg; from £1,750 to £2,000.
- Daggafontein Mines, Ltd., Johannesburg; from £730,000 to £980,000.
- Walter Wilkinson, Ltd., Johannesburg; from £6,500 to £15,000.
- Chicory, Ltd., Johannesburg; from £300 to £227.
- G. H. Lewis, Ltd., Johannesburg; from £100 to £2,000.
- New Abbotts Mine, Ltd., Barberton; from £24,120 to £24,200.
- Rand Mining Timber Co., Ltd., Johannesburg; from £3,000 to £15,000.
- E. Inspection Syndicate, Ltd., Johannesburg; from £3,250 to £3,575.

IN LIQUIDATION.

- Hockberg Tins, Ltd., Johannesburg; capital £27,500.
- Creswick & Company, Ltd., Johannesburg; capital £500.
- Leslie Trading Company, Ltd., Johannesburg; capital £10,000.

The Modderfontein Deep Levels, LIMITED.

(Registered under the Limited Liability Laws of the Transvaal.)

VESTED ENEMY SHARES PURCHASED FROM CUSTODIAN OF ENEMY PROPERTY.

NOTICE IS HEREBY GIVEN that under an agreement entered into with the Custodian of Enemy Property for the Union of South Africa, and subsequently confirmed by the Supreme Court (Transvaal Provincial Division), the Company has purchased enemy-owned shares in the Company vested in the said Custodian—aggregating approximately 70,000—at the price of £6 12s. 6d. per share.

Of the shares so purchased, the Board of Directors have decided to set aside 23,810 for distribution among the shareholders of the Company as a portion of the next dividend. The balance of the shares is to be offered at the purchase price to shareholders of the Company (not being subjects of any State which has during the recent hostilities been at war with Great Britain) pro rata to their shareholdings.

The Union Corporation, Limited, has guaranteed, in consideration for a cash commission of 5 per cent. on the purchase price of such of the shares as are not set aside for distribution as dividend to take up at such purchase price any shares not set aside as above or accepted by shareholders.

Shareholders as above defined resident outside of the United Kingdom and France are now offered shares, the subject of the above purchase, in the proportion of 1 share for every 10 shares (excluding fractions) held by them at the close of business on Wednesday, 21st May, 1919, at the price of £6 12s. 6d. per share, payable on acceptance. Shareholders will not be entitled to renounce in favour of third parties.

Provided that the respective Governments grant permission thereto, within a period and upon conditions satisfactory to the Board of Directors of the Company, a similar offer will be made to all shareholders of the Company resident in the United Kingdom and France.

Due notice will be given when the Share Certificates are ready for delivery.

Forms of Acceptance, obtainable at the Head Office of the Company, duly signed and accompanied by bankers' drafts or cheques on Johannesburg in favour of The Modderfontein Deep Levels, Limited, for the sum of £6 12s. 6d. per share, must be despatched so as to reach the Head Office of the Company not later than the 28th May next, after which date no acceptance will be entertained. Shareholders whose acceptances and payments have not reached the Head Office of the Company by such date will be deemed to have declined the above offer.

The Register of members of the Company will be closed from the 22nd to the 28th May, 1919, both days inclusive.

By Order of the Board,

UNION CORPORATION, LIMITED,

Secretaries.

Per C. L. CHALMERS.

Head Office: 94, Main Street.

(P.O. Box 1125), Johannesburg.

7th May, 1919.

GEDULD PROPRIETARY MINES, LIMITED.

(Registered under the Limited Liability Laws of the Transvaal.)

Vested Enemy Shares Purchased from Custodian of Enemy Property.

NOTICE IS HEREBY GIVEN that under an agreement entered into with the Custodian of Enemy Property for the Union of South Africa, and subsequently confirmed by the Supreme Court (Transvaal Provincial Division), the Company has purchased enemy-owned shares in the Company vested in the said Custodian—aggregating approximately 250,000—at the price of £2 0s. 0d. per share.

Of the shares so purchased, the Board of Directors have decided to set aside 85,185 for distribution among the shareholders of the Company as and by way of dividend. The balance of the shares is to be offered at the purchase price to shareholders of the Company (not being subjects of any State which has during the recent hostilities been at war with Great Britain) pro rata to their shareholdings.

The Union Corporation, Limited, has guaranteed, in consideration for a cash commission of 5 per cent. on the purchase price of such of the shares as are not set aside for distribution as dividend, to take up at such purchase price any shares not set aside as above or accepted by shareholders.

Shareholders as above defined resident outside of the United Kingdom and France are now offered shares, the subject of the above purchase, in the proportion of 2 shares for every 11 shares (excluding fractions) held by them at the close of business on Wednesday, 21st May, 1919, at the price of £2 0s. 0d. per share, payable on acceptance. Shareholders will not be entitled to renounce in favour of third parties.

Provided that the respective Governments grant permission thereto, within a period and upon conditions satisfactory to the Board of Directors of the Company, a similar offer will be made to all shareholders of the Company resident in the United Kingdom and France.

Due notice will be given when the Share Certificates are ready for delivery.

Forms of Acceptance, obtainable at the Head Office of the Company, duly signed and accompanied by bankers' drafts or cheques on Johannesburg in favour of the Geduld Proprietary Mines, Limited, for the sum of £2 0s. 0d. per share, must be despatched so as to reach the Head Office of the Company not later than the 28th May next, after which date no acceptance will be entertained. Shareholders whose acceptances and payments have not reached the Head Office of the Company by such date will be deemed to have declined the above offer.

Holders of Share Warrants to Bearer, resident in South Africa, who desire to avail themselves of this offer must deposit their Share Warrants, together with a statement in writing of their names and addresses, at the Head Office of the Company on or before the 21st May, 1919. Each such holder will thereupon receive a separate form of acceptance, which must be duly completed and forwarded, accompanied by banker's draft or cheque on Johannesburg for the amount of £2 0s. 0d. per share payable on acceptance, so as to reach the Head Office of the Company not later than the 28th May, 1919. Share Warrants so deposited will be released on and after the 30th May, 1919.

The Register of members of the Company will be closed from the 22nd to the 28th May, 1919, both days inclusive.

By Order of the Board,

UNION CORPORATION, LIMITED,

Secretaries.

Per C. L. CHALMERS.

Head Office: 94, Main Street.

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7th May, 1919.

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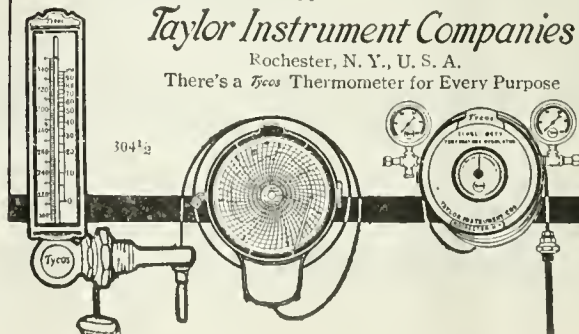
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THE S.A. Mining AND Engineering Journal

WITH WHICH IS INCORPORATED
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NOTICE.—The postage of this issue of the *S.A. Mining and Engineering Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

The Late Mr. H. T. Lewis.

With the utmost regret we have to record the death, news of which reaches us as we go to press, of Mr. H. T. Lewis, the popular and highly-respected manager of the Commissioner Street Branch of the Standard Bank. During the years of his residence in Johannesburg Mr. Lewis had won for himself a foremost place in the financial world of the Rand and had endeared himself to a wide circle, not confined to the clients of the bank, by his unfailing courtesy and genial personality. His passing is a distinct loss to the business world of Johannesburg.

* * * *

Coronation Collieries.

Interest in Coronation Collieries has been stimulated of late by the fact that the Company has acquired, for cash, a large area on the Delagoa Bay Railway, carrying coal of excellent quality. The V.F.P. Company is largely interested in the Coronation Collieries, and, in addition to the market its power stations provide, the export trade may now be profitably exploited from the new property of the Company.

* * * *

Share Splitting and Quarterly Dividends.

In another part of this issue appears a thoughtful article advocating the practice of mine employees being encouraged to acquire shares in Rand mining companies as a factor making for the reduction of industrial unrest. We would welcome the views of our readers on the subject. As an aid to acquisition of the shares of the best companies by mine employees, it is suggested that the high-priced shares should be split up into shares of smaller denominations, and it has also been put to us that we should advocate the payment of dividends quarterly instead of half-yearly, in order to increase their attractiveness to smaller men. Another practical suggestion is that dividends should be paid out more promptly than at present, the delays now apparently inseparable from the work of distribution being regarded as unnecessary and discouraging to small investors.

* * * *

Springs Mines.

It is satisfactory to learn that the value disclosed by development in the reserve for April was a dwt. per ton higher than in March. The stratigraphical indications in the region of No. 3 shaft point to the probability of the reef being intersected there at a substantially shallower depth than was originally anticipated.

* * * *

West Springs.

Development in the West Springs property is disclosing much improved results. The last three assays have given 352, 380 and 432 inch dwts. The last of these assays has yielded 9.8 dwts. per ton over 14 inches, which is a decidedly encouraging result.

* * * *

Daggafontein Mines.

Official notification has been received from the Under-Secretary of Mines and Industries that His Excellency the Governor-General, on the recommendation of the Mining Leases Board, has been pleased to approve of the applications as set forth in the annual report, namely:—(1) In terms of the Transvaal Mining Leases and Mineral Law Amendment Act, 1918, for the grant of a lease of the under-mining rights of an additional area on the Farm Daggafontein, in order to constitute a workable mining proposition. (2) The exchange of ground known as the New Geduld Deep Mynpachten, in extent 173 claims, for an equal area on Daggafontein. The claim area of Daggafontein Mines will now be approximately as follows: Mynpacht area, say 1,257 gold claims; discoverer's claims, 179 claims; exchange for New Geduld Deep Mynpachten, 173 claims; leased from

Government, 450 claims; total, 2,059 claims. This total is subject to survey. The western boundary of Daggafontein Mines now adjoins the eastern boundary of Springs Mines, Limited. Under the new scheme of things for the Daggafontein Mines, Limited, the area leased from the Government will be in extent 450 out of a total of 2,059 claims, or 21.885 per cent., and the taxable proportion of profits will be in this ratio. Good progress is being made in the sinking of the No. 2 shaft, which was deepened by 192 feet last month, and also in the sinking of the incline from the No. 1 shaft to No. 2. Approximately one-third of the intervening distance has now been covered. The Company intends embarking on an ambitious policy of development and equipment. In our next issue we shall deal at length with the enlarged prospects and activities of Daggafontein, and we then hope to publish a map depicting the new and original areas of the Company.

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The Springs' Consulting Engineer's Report.

The following official notice has been issued in regard to a paragraph contained in the Consulting Engineer's report which appears elsewhere in this issue: As there appears to be some misconception concerning the statement in Mr. Davis's Report to the effect "the ore reserve as at 31st December, 1918, contained 1,117,000 tons of ore of an average value of 9.76 dwts. not available for stoping, comprising shaft and haulage pillars and blocks of ore indicated," we are instructed to state that the ore reserve, as at 31st December, 1918, contained 1,117,000 tons of ore of an average value of 9.76 dwts. not available for stoping. This tonnage was segregated as follows: Shaft pillars, 65,000 tons, average value 7.12 dwts; haulage pillars, 325,000 tons, average 9.90 dwts; blocks of ore not immediately available for stoping, 727,000 tons, average value 9.93 dwts; total, 1,117,000 tons, average value 9.76 dwts. The ore contained in haulage pillars forms blocks 50 feet wide on either side of each haulage way. It is the intention to leave these pillars intact for the time being. Referring to the 727,000 tons of unavailable ore, this comprises blocks which will become available on the completion of subsidiary development, or as stoping in contiguous areas progresses.

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C.M. and M. Society.

The next ordinary general meeting of the Chemical Metallurgical and Mining Society will be held in the lecture theatre, South African School of Mines and Technology, Johannesburg, on Saturday, the 17th inst., at 7.45 p.m. General Business: "The Handling of Amalgam from Steam-Ed Plates"; the Witwatersrand University. Papers for Reading: (1) "Notes on the Closer Working and Joint Housing of Technical and Scientific Societies on the Rand," by Mr. Percy Cazaret (Member) on behalf of the Sub-Committee representing this Society, the S.A. Institute of Engineers, and the S.A. Institute of Electrical Engineers; (2) "Note on Defective Air in Raises and Back Stopes," by Mr. C. J. Gray (Member of Council), Inspector of Mines, Johannesburg; (3) "Safety First Method for the Estimation of CO₂ in Mine Air," by Mr. H. R. S. Wilkes (Member). Reply to Discussion: "Notes on the Footwall Beds of the Far East Rand Reef," by Mr. L. W. Macer (Associate). Final Discussions: (1) "The determination of Available CaO in the Different Classes of Lime supplied to Rand Reduction Works," by Mr. C. A. Meiklejohn (Member); (2) "The Application of the Theory of Probability in the Determination of Ore Reserves," by Mr. G. A. Watermeyer (Member of Council). Continued Discussion: (1) "Ancient Tin Mines of the Transvaal," by Mr. Max Baumann (Member); (2) "Chemical Engineering," by Prof. J. A. Wilkinson (Past-President); (3) "Notes on Economics in Hand Drill Steel," by Mr. H. A. Read (Member); (4) "Agricultural Motor Tractors," by Mr. G. Hildick-Smith (Past-President). Awaiting Reply: "The Effects of Dust Inhalation," by Dr. J. S. Haldane, F.R.S. (Hon. Member).

Stock Exchange Restrictions.

The chairman of the Johannesburg Stock Exchange has received the following letter from the Secretary for Finance: "With reference to your letter of the 8th inst., relative to the restrictions on dealings between London and South Africa. I beg to inform you that the High Commissioner has to-day been requested by telegraph to ascertain from the Imperial Treasury when it is anticipated the restrictions will be removed. The High Commissioner has further been requested to inform the Imperial Treasury that the Union Government supports the representations made by you."

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Southern Van Ryn.

Mr. L. W. Macer, formerly of the staff of the Brakpan Mine, and author of an important paper recently read before the Chemical, Metallurgical and Mining Society, has been appointed manager of the Southern Van Ryn Reef G.M. Co., and has already taken up his duties. Monthly reports will be issued to all registered shareholders of the progress being made in the opening up of this property.

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Tin Prices.

Some years ago, says the *Cornubian*, the Home Office published statistics which declared that the average metallic content of black tin was about 64 per cent. Statements from the side of the smelters have declared it to be about 60 per cent. As to the average value, this was formerly considered to range from 58 to 75 per cent. of the ruling prices of metallic tin, or a mean of about 66 per cent. as a fair average for well dressed ore. This would give £159 per ton for white tin at £242 (the price at the last ticketing), the smelters still having to cover themselves. The average received was £125 per ton. It is true that the returning costs of the smelters are much heavier now than formerly, but in this relation it is a curious anomaly that while at the last ticketing the average was £125 black for £242 white, at a ticketing as recently as January 27 last the average was the same with white tin at £248. In other words, the mines received no advantage when the market was £6 per ton higher. These things require investigation and explanation. There is a very widespread impression that closer enquiry and a more definite understanding between buyer and seller would be to the lasting benefit of the industry.

* * * *

Jagersfontein Miners' Demands.

The threatened strike on the Jagersfontein mines, in the Free State, was averted by the intervention of the South African Mine Workers' Union. The representatives of the Union who conducted the negotiations have returned to the Rand. There was a great amount of discontent in the district on the wages question. The men were being paid from 6s. 8d. a day upwards, but the majority of the men came under 15s. per day. The local branch of the Mine Workers' Union had laid down a scale which they wished to establish as a minimum, and the whole position was debated with the manager, Mr. Pitchford, in a conference lasting over four hours. The grievances in several individual cases were remedied, and Mr. Pitchford conceded the point that men working in other men's places should receive a half-shift pay. Regarding sick leave, he also admitted "influenza" days as working shifts. The men claimed a 45 hours' week underground, but Mr. Pitchford asked them to leave this over until after the Industrial Conference on May 5, when a general reduction of hours will be debated. This was considered a fair request. Mr. Pitchford conceded a 48 hours' week for men employed on surface work, and promised to introduce it as soon as he could make the necessary alterations to the gear and the machines. These alterations will probably be completed by June 1. Other points were left in abeyance. At a meeting on Thursday night the men agreed to place themselves in the hands of the S.A. Mine Workers' Union, and that body will conduct the further negotiations.

TOPICS OF THE WEEK.

WILL JOHANNESBURG LAST?

IN our last issue a correspondent painted a very gloomy picture of the future of Johannesburg. As a set-off, we print in this issue the views of other and equally well-informed correspondents, showing the reverse of the picture. The truth, we believe, lies somewhere between the two extremes. "No city of the size and importance of Johannesburg," a distinguished American visitor told us a few years ago, "need fear for the future"; and he went on to illustrate his belief by showing that in America, though small mining towns had reverted to nothingness, no city of the standing of Johannesburg had ever faded with its mines. Still, though Johannesburg is the financial and commercial distributing centre and capital of the Union and is much too deeply rooted in the economic being of the country ever to lose its pre-eminence, it cannot be denied that the immediate future, darkened by the coming closing down of several big mines just at the time when unemployment and distress may be most pronounced, is full of misgiving. The root of the whole matter is, of course, the low-grade mines, which, it must not be forgotten, make up the bulk of the industry, and in regard to them the outlook is not quite hopeless if only the Government awakens, before it is too late, to its plain responsibilities. What is wanted on the part of the Ministry is more sympathy with, and more understanding of, the needs of the industry, now confronted by a host of general and special difficulties. It is no fault of the official spokesmen of the mines that matters should have been allowed to drift into their present dangerous state. Over and over again they have protested against the burdens continually being heaped upon the industry. Our own columns during the past four years teem with evidences of the efforts of the mining people here to enlighten and educate the Government upon the plain facts and necessities of the case. As one result of these efforts, the Select Committee on the Low-Grade Mines sat, took evidence, reported—and nothing was done. Instead, the burden of taxation, direct and indirect, on the mines was augmented by fresh and larger imposts. War levies, dividend tax, railway rates—all went to add their quota to the already heavy burden of the industry. On top of all this the implied understanding between the industry and the Union Government that the Province should not also mulct the mines was broken, and the Provincial Council has now gaily set out to add to the squeezing process. Moreover, before the end of the present session of the Union Parliament we are promised globular additions to the burden on the industry under the head of increased miners' phthisis compensation, and there is reason to fear that the relief promised in the shape of a local mint will, after all, resolve itself into a fresh revenue-raising measure and machine for the Government. Alleviation of the position in the one direction in which the Government could effect it, namely, by securing the importation, under proper safeguards, of tropical native labour, has been denied. The upshot and cumulative result of all these things is that the position of the industry has never been in all its history worse than it is to day. If, say, the East Rand Proprietary has, as a result of these general difficulties and its own special shortcomings, to close down, the consequences cannot be confined to a single area. Indirectly, every deep level mine on the Near East Rand must be affected by the resulting water troubles, and some of them are now so perilously near the margin of profitability that they too must inevitably follow suit and cease operations. The tragedy of it is, that all these dire events should happen *vis-a-vis* the return of our men from the war and just at the moment when every effort should be put forth to expand, certainly not to restrict, the field of employment. It is inconceivable to us that the Government should any longer remain blind and passive to these probabilities. Ministers, it is true, have shown only too plainly in the recent incidents

of the University site and the School of Anatomy, that they have no sympathy with the aspirations and ambitions of the Rand. But the plight of the mines is the concern of the whole Union as well as of Johannesburg. The matter is neither a party one nor a question of provinces. Every province, every political party, and every port of the Union must feel the effects of the slump now threatening the Rand. All are members of the same body, and the fortunes of the industry affect the furthest corner of the Union and every fibre of its economic life. If the Government does not know all this, it certainly is not for the want of being told. If it persists in refusing to admit the seriousness of the position, and continues passive in face of its manifest obligations, then from the present drift of events, the next six months, we fear, will sadly disillusion it.

The April "Engineer and Electrical Review."

The latest issue of the *South African Engineer and Electrical Review* begins the second year of the life of this interesting and vigorous publication. Now that the war has enabled engineers to take a new outlook upon the future, we may expect to see this journal well to the front as representing engineering thought and recording technical activities in South Africa and elsewhere. The present issue contains several articles which discuss matters of special importance to engineers at the moment; for instance, the question of design and power in the construction of farm engines; the progress of the Pretoria Iron Works, which, it is hoped, will prove to be the pioneer of a great and flourishing industry in this country; and the essential features of a sound training in chemical engineering, a subject which Professor Wilkinson, of the School of Mines and Technology, has made peculiarly his own. There are topics on the agricultural side of engineering also which are referred to at some length; the recent experiments on the electrification of seeds for example, road transportation, and the economy of hydraulic ram pumps, and nitrate of potash in South Africa. Other matters referred to are the manufacture of carbon electrodes, Mr. P. M. Clark's steam slide rule, the Port Elizabeth Power Station, steam v. electricity in sinking and winding, and railway electrification. It is altogether a satisfactory and creditable number.

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Rhodesia Broken Hill.

The Rhodesian Lead and Zinc Syndicate, Ltd., which took over the development and operation of the lease of the 35 square mile mineral area containing the Rhodesia Broken Hill mines, has now been liquidated and the property returned to the Rhodesia Broken Hill Development Company. From April 1, 1916, to February 28 last the syndicate produced 15,383 tons of lead. It is now considered that development work has brought into sight sufficient ore to justify an extension of the plant. At No. 1 Kopje the contents are estimated at 100,000 tons of metallic lead and 25,000 tons of metallic zinc, and No. 2 Kopje is estimated to contain to water-level about 300,000 tons of 32 per cent. zinc ore. An additional smelter has been ordered, and it is anticipated that it will be in operation by the end of the present year, when the output should be increased to 1,500 tons of metallic lead per month. The consulting engineers consider that the company is warranted in undertaking expenditure in the preliminary development of a zinc industry, and they also advise considerable outlay upon prospecting and geological work. The Central Mining and Investment Corporation and others have exercised the options they hold on the unissued shares of the company, subject to Treasury consent being obtained. Lead sales include all this year's output. Additional pumping equipment has been installed, and arrangements made for the adoption of the François cementation process to deal with the water encountered in the country surrounding the deposits, which has impeded the sinking of the new main shaft. The results so far reported are favourable.

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A SOLUTION OF OUR LABOUR PROBLEMS.

Industrial Strife and How it can be Changed to Industrial Peace—The Example of the Body and the Limbs—An Offer Turned Down—The Reef and the Race Course—Colossal Sums that Might be Diverted into Profitable Channels—Profit Sharing at the New Modderfontein—A Trust for Workers—Pros and Cons of the Co-Partnership Scheme on the Rand—High Priced Shares to be Split—Application of the Law of Averages to the Workers' Investments—How the Salvation of the Industry may be Worked Out—Some Facts and Suggestions for Both Sides to Consider—The Only Abiding Solution of the Problem.

(Specially written for the "S.A.M. & E.J.")

THE reconciliation of Capital and Labour is the biggest problem in the world to-day. This troubled earth of ours appears to have laid the sword of international warfare aside only to pick up the many-handed weapons of industrial strife which bid fair to rival in their destructiveness the ravages which Europe has witnessed in the last four and a half years. How to pacify Labour is Capital's greatest question, and how to extract the uttermost farthing from Capital appears to be Labour's sole aim at the present day. Whole volumes have been written on this subject in the past—many libraries could easily be dedicated to the great problem in the light of recent happenings, of the development of Bolshevism, the curtailment of industry, the disclosures of profiteering and the revelation of the urgent and immediate need of revivifying the commercial blood of five continents. The essence of all this controversial literature, the essence of all speeches and the essence of all action boils down to this, however, that Capital and Labour or Labour and Capital are each complementary to the other, and that strife between the two is only comparable in its utter futility to the old fable of the quarrel between the body and the limbs. We in South Africa and particularly on the Rand, although we have been spared the horrors of international warfare, have been well nursed in the paralysing effects of industrial strife during the past few years.

THE GREAT PROBLEM OF THE INDUSTRY.

It is fortunate for the Rand that the Chamber of Mines has had in the person of Sir Evelyn Wallers a President of broad and sympathetic views during the difficult period which we have recently been passing through. It would, too, be a matter for congratulation all round if the Labour Party had more men of the logical type of Mr. Crawford to guide their counsels. For it has become abundantly clear during the past few weeks that the breaking strain has been well nigh reached and that the gold industry with its product remaining at a standard value whilst costs of labour and commodities have been steadily rising for the past four and a half years, can bear little if anything more in the shape of further taxation or additional burdens of expenditure accruing through fresh labour demands. Last month twelve Rand mines worked at a loss and a number more operated at such a small margin of profit that one is tempted to ask whether it was worth the while, from a shareholder's point of view, to crush so much ore for such a meagre result when the capital involved is taken into account. It has recently been stated on high authority that our mines are to-day only returning 2½ per cent. on the capital invested. This is less than the Post Office Savings Bank yields, and the Post Office Savings Bank offers a measure of security which few mines can give. It is clear that something must be done to better the position. We must either increase the selling price of our production or else we must endeavour to reduce the costs of our marketing that product, and in no branch of the industry is there so much scope for improvement of economic conditions as in regard to skilled European labour. Labour has reached a high stage of organisation to-day; too high a stage in the opinion of many of the workers themselves. There is nothing not understandable in the endeavour of Labour to better its own class conditions, provided that requirements are kept within reason. But there is, of course, everything in the world to be said against a policy which, if carried to its logical conclusion, will require

that the cost of a ton of ore containing 25s. shall be 26s. Unfortunately, however, many Labourites appear in the public view bared to the waist and armed to the teeth for a fight which on the low grade battlefield of the Rand can only end in one result. Capital, on the other hand, although possessing at least one valuable weapon to counteract extortionate white demands, appears to be in a conciliatory temper rather than in a mood of ultimatums. So long as these two rival spirits are maintained a reconciliation of Capital and Labour is out of the question. It is as impossible to conciliate a Bolshevik as it is futile to endeavour to compel a millionaire to throw away and continue to throw away his money on an unprofitable enterprise. What alternatives are there to this destructive aggression and on what basis may each side sign an abiding peace satisfactory to both parties? State mining is sometimes suggested as a solution. Personally we do not believe in the ability of the Government to work at a profit mines which private companies can only operate at a loss. We greatly doubt the ability of the Government to do this, and we also greatly question the advisability of attempting such an experiment. The writer of this article, as a humble citizen and taxpayer of this country, would for instance greatly resent the Government incurring a loss through attempting to work the Simmer Deep mine in the interests of the State, since it is extremely seldom that the monthly revenue of that company exceeds the cost of production. State mining or internationalisation of the mines, call it what you will, does not from our point of view afford a satisfactory solution of the problem.

PAST OFFERS TURNED DOWN.

But there is, we think, a course of action which in some measure approaches State mining and which might succeed where all other conciliatory methods have failed. If the workers were themselves part owners of the mines on which they laboured it would surely tend towards a maximum of effort to secure the best working results, a minimum of inclination for the use of the strike weapon and a notable tendency towards raising the waning efficiency, discipline and loyalty of the Labour forces, both white and black, of the mines. There is nothing new in the suggestion. It has been put into practice in England, and it has been successfully adopted by Mr. Ford in America. Such a policy has, too, been advocated in this country and on the Rand. If our memory serves us aright it was Mr. Raymond Ffennell (then Mr. Raymond Schunacher) who suggested to the workers of the Rand that they should invest their savings in the great corporation of which he was one of the heads. But the workers distrusted the suggestion. They thought that the fruits of their labours might soon be dissipated in the perilous atmosphere of high finance and the equally hazardous environment of over-capitalised mines. There are many who still deem the suggestion an inadvisable one and that the making of it merely courted an indignant refusal. Yet it would be idle to deny that had the workers adopted the scheme most of them, despite the failure of some of the Corner House mines, would be richer men to-day. The workers declined Mr. Ffennell's offer, however. They preferred the roar of the ring and the alluring possibilities of cheap wild-cats to the investments offered them by a firm of astute men whose first object in life is to make money and who appear to have been fairly successful in the attainment of that object. Nevertheless there are along the Reef a con-

siderable number of workers who are men of very considerable possessions. They have bought stock in good sound companies, have reaped the harvest of the dividends, and are in most comfortable circumstances to-day. These men are naturally the most contented and so the most efficient workers which the Rand possesses—they are the non-coms of industry and the backbone of our commerce.

WHERE THE REEF'S MONEY GOES.

But on the other hand the majority prefer to squander their money every week at a race meeting. The amount of money that is lost each and every Saturday by the workers on the mines is colossal. Most men by the time they have reached to years of discretion have been abundantly disillusioned of the idea that bookmakers and totalisators were placed in this world for the purpose of enriching the public. The average Rand mine worker long ago learned this lesson. But he continues to bet, and the writer knows, from experience and conversations around the shaft head or in the exchange house, that the Rand miner regards the racecourse as some monstrous institution legalised by Government to commit wholesale robbery, but which he is compelled by custom and the magnetic mirage of a lucky chance coming home to patronise. If the money or even one-half the money which each week-end finds its way from the Reef into the satchels of the bookmakers and the coffers of the tote could be diverted into the better of the mines on which the workers who now bet are engaged, one would hear much less of strikes and a good deal more of month-end prosperity.

THE NEW MODDER SYNDICATE.

A step in the direction of profit-sharing seems to have been taken by some of the workers themselves at the New Modderfontein, where a syndicate of employees has purchased a block of shares and has received every assistance from the management in the securing of an interest in the business which gives them their daily bread. There is a tremendous amount to be said in favour of such a policy at a mine like the New Modder, with its firmly established position and an assurance in the shape of ample ore reserves of an ability to pay an excellent rate of interest on the present price of the shares for a number of years to come. A similar move in the direction of co-partnership might be advocated in the case of Modder B., Modder Deep and Modder Government Areas. From the point of view of the small purchaser, however, the high price of these securities is an objection, and although odd lots of these shares are often obtainable, the more satisfactory means of getting over this difficulty would appear to be secured by syndicates (as in the case of the New Modder), or better still by the splitting of the shares into dimensions which will allow of purchase without the laying down of a comparatively large amount of money. The chief objection to the scheme is that mining stocks are more subject to violent fluctuations than most other forms of investment, although in the case of the New Modderfontein, Modder Deep, Modder B., and Modderfontein Government Areas the element of risk is reduced to a minimum by the establishment of payable ore reserves years ahead of milling requirements. In the case

of each of these mines the development position is so secure that only extraneous factors, such as strikes, shortage of labour, wars and financial crises, are likely to affect the share value. In the case of each of these mines too, and in fact of all Rand mines, a settlement of labour problems which would be accompanied by higher labour efficiency could easily improve the profits by a shilling per ton or more and correspondingly benefit dividends and share prices.

THE CONTENT OF THE WORKERS.

If such a result were secured through loyalty and content on the part of the workers, based on community of business interests, it is certain that gold mining on the Rand would be rendered a much more prosperous industry than it is at present, whilst the development of new areas on the Farther East Rand would be tremendously stimulated. The splitting of the high-priced shares in our best mines should certainly result in more of the stock being held by employees, and although one or two objections have been raised in regard to this voluntary co-partnership we cannot help thinking that good would result from such a policy. The principal objection raised to this application of the principles of community of interest through the purchasing of the shares on the Rand is that if prizes depreciated and dividends fell through some more or less sudden change in the value of the ore, there would be great discontent amongst the stockholding employees, and that under these circumstances the employees' interest as well as the employers might be prejudiced by rash action arising out of disappointment and pecuniary loss.

ADVANTAGES AND OBJECTIONS.

It has also been argued that it might not be in the best interests of the companies concerned to have too large a measure of control vested in shareholding workers since the employees might consider it worth while to "bear" the stock

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by coming out on strike and acquiring shares at a depreciated value. This second objection does not appear to us to be a matter worthy of much consideration. We do not think that the interested workers would attempt any such coup in an admittedly dangerous method of haut finance which might react on their own heads in a paralysing counter attack. But the first named objection—i.e. that the workers must not lose their money in the stocks in which they are working partners—demands most careful investigation. Then again it must be remembered that there are not too many New Modderfonteins on the Rand and that, if facilities for co-partnership in profitable mines are accorded employees of those mines, some corresponding attraction must be offered to those who keep the mills of the lower grade concerns at work. No worker would be anxious to invest money in a property that is working at a loss and has little opportunity of paying dividends whilst more fortunate employees are participating in the gold harvest of a rich mine. These are difficult problems and they would require the most searching and careful examination.

THE TRUST SCHEME.

But would it not be possible to apply the law of averages to the question? In other words would it not be within the realm of reasonable achievement to form a Workers' Trust, in which all mine employees would have an interest in the Rand as a whole—a Trust which would possess shares in all the profitable mines of the Witwatersrand proportionately to the numbers of employees? It would put into practical form the common saying that what is lost on the roundabouts is made up by the coconut slices and it calls for no extended attempt at explanation. Against this it is contended by some that interested loyalty to the mines cannot be secured except through the medium of a scheme whereby the workers have a financial stake in their mine alone and are not involved in the fortunes of other mines in which they have no working interest. This may be so. We do not pretend to know how far this objection would nullify the objects of the Trust. But we do feel that the solution of the labour trouble lies in the direction of a co-partnership based somewhat on the lines above indicated, and in this belief we are confirmed by the experience of the New Modderfontein Syndicate of capitalistic miners. In our view the best scheme of all would be the setting aside of blocks of dividend-paying shares for employees by the companies concerned on some basis or other of the Trust scheme whereby the law of averages would have an application in the direction of maintaining profits.

THE ONLY SOLUTION.

Each employee would participate in the dividends secured according to his position on the mine, his service and general conduct, and on the conclusion of his service from any cause the shares allotted to him would be set to the credit of his successor. The directors of this profit-sharing scheme would thus hold the stock in trust for employees, and there

would then be no question of the profit-sharers incurring loss of capital. The details of such an undertaking would require most careful planning, and the Trust would call for expert management by a board composed of the representatives of the ordinary shareholders and the workers. Such a scheme should not be out of the question. At any rate we commend it to the notice of the leaders of both Capital and Labour as a basis upon which industrial peace may be framed. A solution of our troubles we are certain lies somewhere along these lines, and over and above the suggestion contained in the immediately preceding context of this article we feel equally sure that the purchasing of the best and most secure of Rand stocks by workers as has been done at the New Modderfontein will of itself tend to less unrest, fewer threats of strikes and the cultivation of a disposition to look at the facts of industry before leaping in the abyss of unemployment. In this latter respect the decision to split the shares of some of the best and highest priced Rand gold mines stocks should achieve much on the Far East Rand if nowhere else.

INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- May 20.—S.A. Land and Exploration Co., Ltd.—Sixteenth Ordinary General Meeting, 38, Meischke's Buildings, at 12 noon.
- May 23.—West Springs, Ltd.—Second Ordinary General Meeting, at 10.30 a.m.
- May 23.—Daggafontein Mines, Ltd.—Fourth Ordinary General Meeting, at 11 a.m.
- May 23.—Springs Mines, Ltd.—Tenth Ordinary General Meeting, at 12 o'clock.
- May 23.—Brakpan Mines, Ltd.—Sixteenth Ordinary General Meeting, at 2.30 p.m.
- May 23.—Rand Selection Corporation, Ltd.—Twenty-seventh Ordinary General Meeting, at 3.30 p.m.
- May 23.—New Era Consolidated, Ltd.—Seventh Ordinary General Meeting, at 4.30 p.m.
- May 27.—New Primrose G.M. Co., Ltd.—Annual Ordinary General Meeting, at 12 o'clock.
- May 27.—New State Areas, Ltd.—Second Ordinary General Meeting, at 12.30 p.m.
- May 27.—New Unified Main Reef G.M. Co., Ltd.—Twenty-first Ordinary General Meeting, at 12.15 p.m.
- May 27.—Ginsberg G.M. Co., Ltd.—Twenty-fourth Ordinary General Meeting, at 11.30 a.m.
- May 27.—Glencairn Main Reef G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 11.45 a.m.
- May 28.—Consolidated Langlaagte Mines, Ltd.—Sixteenth Ordinary General Meeting, at 10.40 a.m.
- May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.—Ninth Ordinary General Meeting, at 3.30 p.m.
- May 28.—Langlaagte Estate and G.M. Co., Ltd.—Twenty-eighth Ordinary General Meeting, at 12 o'clock.
- May 28.—Randfontein Estates G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 2.45 p.m.
- May 28.—Van Ryn Deep, Ltd.—Fourteenth Ordinary General Meeting, at 3.10 p.m.
- May 28.—Witwatersrand G.M. Co., Ltd.—Annual Ordinary General Meeting, at 11.30 a.m.
- May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.
- June 18.—Crown Mines, Ltd., 23rd ordinary general meeting, 11 a.m.
- June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
- June 19.—Durban Roodepoort Deep, Ltd., at 12 noon.
- June 20.—City Deep, Ltd., at 12 noon.
- June 20.—Robinson G.M. Co., Ltd.—Twenty-ninth Ordinary General Meeting, at 2.30 p.m.
- June 24.—Village Deep, Ltd., at 2.30 p.m.
- June 24.—Geldenhuis Deep.—Twenty-fourth Ordinary General Meeting, at 11 a.m.
- July 17.—Modder Deep Levels, Ltd., Extraordinary General Meeting, Consolidated Building, 11.30.

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SOUTHERN VAN RYN.]

The Goldfields Withdraw—New Policy of the Company—A Sound Financial Position—Mr. Bleloch's Opportunity.

THE Southern Van Ryn property has reverted from the control of the Consolidated Gold Fields of South Africa, Ltd. (which firm acquired an interest in the company rather more than a year ago) to its original board of directors, in consequence of a difference of opinion between the Gold Fields Corporation and Mr. Bleloch and his associates on the subject of the two-reef theory. Under date May 9th the Consolidated Gold Fields, who have acted as secretaries, write:—

We are instructed by the board to state that an amicable agreement has been come to between the board of the Southern Van Ryn Reef G.M. Co., Ltd., and the Consolidated Gold Fields of South Africa, Ltd., under which the Consolidated Gold Fields have for the present agreed to withdraw from the technical and administrative control of the company. The Consolidated Gold Fields of South Africa, Ltd., have adopted this course mainly in deference to a widely expressed opinion of shareholders that the mining policy should be determined in accordance with the original promotion of the company as an outcrop proposition, and owing to the fact that differences of opinion on this subject during the sinking of the proposed deep shaft (the results of which could not be proved for a considerable time) might, and in the opinion of the shareholders whose views Mr. Bleloch has represented to the board, would militate against their joint interests. In the event of the working of the mine as an outcrop proposition being justified by results, the resumption of control by the Consolidated Gold Fields (which is now relinquished) is by mutual consent to remain an open question. In the meantime the current options remain in force and if an extension thereof should be desired it will be submitted to shareholders in due course.

A circular on this subject has now been forwarded to shareholders by the new board, and in this circular it is stated: As announced in the Press an amicable arrangement has been concluded with the Consolidated Gold Fields of South Africa, by which it is made possible to open up the Southern Van Ryn mine in accordance with its original promotion as an outcrop proposition instead of a deep level. The Consolidated Gold Fields have surrendered the technical and administrative control and for the present their representatives have retired from the board. The new board has decided that shareholders should be informed at the earliest possible moment of the financial position of the company and the mining policy now to be pursued.

Finance.—With a total issued capital of £339,224, the available working capital in cash is £92,309, and when the full authorised capital of £615,000 is all issued, the total available working capital from present data estimated on the basis of the present option prices will be £386,835. The company has no liabilities. Its stores stand in the books at £2,079 and its machinery and plant at £11,167, all paid for and worth considerably more at current prices.

The Mine and its Reefs.—The company owns 1,662 claims, free and unencumbered, carrying both the Van Ryn Reef and the Nigel Reef throughout the entire length of the property, over three miles in extent. These reefs dip with a sharp declination of from 15 degrees to 60 degrees to the west, and this gradient assures large tonnages per claim. The profits to be made are not subject to any percentage payments such as the Government requires from the leased areas in the neighbourhood, but subject only to the ordinary profits tax, profits belong to shareholders. Both the Van Ryn and the Nigel Reefs have been located by shafts and boreholes and their sub-outcrops come within from 50 to 100 feet of the surface. The principal reef, the Van Ryn, was opened up in the old Henderson Nigel shaft, at the south end of the property, at a depth of 217 feet. It is of great width and the records of the reef at this place show payable values. A new shaft will be sunk near the

Henderson Nigel shaft and active development of the Van Ryn Reef will begin at once. On the northern portion of the property an incline shaft has been sunk on a reef which is now identified with practical certainty as the Chimes Reef, that is, the reef in the upper portion of the Van Ryn formation, upon which the New Modderfontein mine was originally floated and on which that company developed 200,000 tons of payable ore. From this reef the Van Ryn Estates Company, too, is also drawing a portion of its ore supply. The values exposed in the incline shaft on this reef over the very limited length of 100 feet sunk on the reef show an average value of 5·89 dwts. over 18 inches. But the values found in prospecting shafts sunk to the sub-outcrop of this reef both to the north and to the south of the incline shaft, show much better values—in one shaft 12 dwts. over 24 inches, and in the other 15 dwts. over 18 inches. Accordingly it has been decided to drive both north and south from the incline shaft to ascertain whether pay shoots exist on this reef as is indicated by the values found in these prospecting shafts. Simultaneously with this work shallow boreholes will be put down to the east of the No. 1 incline (Chimes Reef) to locate the sub-outcrop of the Van Ryn Reef in this northern section. The location of this reef is made easy by the following data. The known outcrop sections of the Far East Rand, at the New Kleinfontein, the Van Ryn and the New Modderfontein mines to the north establish the position of the Van Ryn Reef relative to the Chimes Reef. This is confirmed by outcrop sections proved to the south during the last twelve months on Tulipvale and the town lands of Heidelberg, where during that period, the Chimes Reef and the Van Ryn Reef and its leaders have been opened along a distance of about six miles. Further, the many boreholes and shaft sections of the deep level mines of the Far East Rand fix this relative position definitely. So that with the steep angle of inclination in the northern part of the Southern Van Ryn area it is expected to cut the Van Ryn Reef between 400 and 500 feet east of the No. 1 incline on the Chimes Reef. This preliminary and inexpensive drilling should be accomplished within two months from date and a commencement of sinking a main haulage shaft on the sub-outcrop of the Van Ryn Reef in this northern section should be possible within a fortnight or so from the date when this reef is cut in the borehole. The Nigel Reef also will be opened up in this northern section as soon as the work above described is well under way. The sub-outcrop of this smaller but yet valuable reef should be found in this northern section, about 1,400 feet back from the sub-outcrop of the Van Ryn Reef that is, in a position within the eastern boundary of the company's property. It will, therefore, be possible to proceed with development both on the Van Ryn and Nigel Reefs and on the Chimes Reef too, if that reef should prove to be payable. After consultation with the technical staff, the board is advised that with the knowledge of the reefs now available, the work of opening up and developing the sub-outcrop areas of these reefs will be very inexpensive, compared with the costly nature of similar work on the neighbouring deep-level mines, and the policy will now be to open up sufficient pay ore to begin production within twelve months. The intention is to lay out the reduction plant on a system different from that imposed upon the deep level mines by their enormous capitalisation. Following the policy of the original outcrop propositions which established these goldfields from the first, this company will not require the great capital outlay demanded by costly deep level shafts, so that from small beginnings the plant can be added to from time to time and brought to any capacity which may be required when the ore resources of the property have been developed on a scale consistent with their magnitude. This statement of the company's affairs will enable shareholders to judge of

the position for themselves, but in presenting it the board thinks it right to point out explicitly to shareholders that the development results of neighbouring mines whose controls confine development to the smaller and less important Nigel Reef and neglect to mine the Van Ryn Reef afford no criterion of the value of the Southern Van Ryn property. It is the Van Ryn Reef with its great tonnage and never-failing values, where opened up by adequate development, which has made the Far East Rand, and now that the control has been resumed by a board which on the advice of its technical staff has determined to make the opening up and development of the Van Ryn Reef the principal object of its policy and the development of the Nigel Reef and other reefs secondary although important aims, it can be confidently expected that the mine will before long be brought into line as a producer with the other great mines working the Van Ryn Reef on the same Far East Rand area on which it is situated. Mr. C. J. Tutt has resigned his seat on the board and has been appointed consulting engineer to the company, and it is with his approval that the board has undertaken the policy of bringing the mine to a producing stage on an initial scale with the £90,000 working capital now available. Later arrangements will be made for working on larger and

larger scale as development and pay tonnages increase. Mr. Tutt has given his assurance that this can be done.

FINANCE.

It will be seen from the financial statement that if the existing options held by shareholders who have taken up their quota of one-fourth of the options they held on 31st December, 1918, are exercised, an additional amount of £294,526 working capital will be available. There is every likelihood that in view of the new policy now adopted shareholders will take up their options as they fall due. This additional working capital of nearly £300,000 over and above the £90,000 presently available will be sufficient to bring the mine into the rank of a great producer and without increasing the capital beyond the £615,000 at present authorised. It will be evident that this is only possible by virtue of the mine's commanding position as an outcrop proposition on the Van Ryn Reef with a sub-outcrop area of approximately three miles in length and with the Nigel and Chimes Reefs available along the same distance as an auxiliary source of ore supply.

Mr. K. B. Quinan: A Striking Appreciation by Mr. W. Cullen.

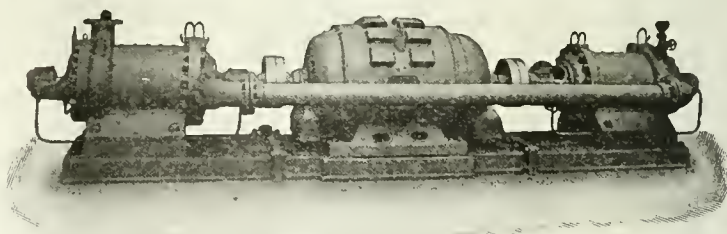
The Chemical Trade Journal and Chemical Engineer of February 22 contains an appreciation of the work achieved in the war by Mr. Kenneth B. Quinan, general manager of De Beers Explosives Works, from the pen of Mr. William Cullen.

"Even at this date," writes Mr. Cullen, "it is hardly wise to comment in detail on his work. I won't go so far as some do in stating that he saved the Empire, but he certainly accomplished more in the space of four years than any other man ever did in a lifetime in the same sphere. Of course, he had exceptional chances, but he took advantage of them to the full; a weaker man would have succumbed to the burden. And yet Quinan is not a college-bred man. I have been to the laboratory in California, where he got his training—the same kind of rough-and-ready training that thousands of youths were receiving both in this country and elsewhere. He differed only from them in his tremendous and all-consuming capacity for work, his thirst for knowledge, and his power of absorbing it—for his memory, even before these Pelman days, was prodigious. And yet he did not neglect his outdoor life. One thing has served him in good stead, and that is his remarkable health. True, he has drawn largely on his reserve during these four strenuous years, but complete change, it is hoped, will soon restore him to his old form. Quinan's position in the Ministry was never, so far as I know, very clearly defined, though I have heard him called Chief Technical Consultant to the Department of Explosives Supply. In the early days, however, he would not allow his name to appear in the Official Directory. In effect, he was really in charge of all the technical work at Storey's Gate—design, erection, control, and statistics; a truly tremendous job. He accomplished all he set out to do, and all he was given to do, and that is saying a great deal, for even in Government circles things were never easy. He is in his person emblematic of 'push and go.' He carried his colleagues along with him through his sheer personality, his breezy outlook, and his untiring example. His influence has been felt in the remotest chemical corners, the factories now lying idle are monumental to his industry and his efficiency, and I know that his personality has inspired many young chemists to greater things. And yet with it all, he is a shy man. On his own subjects, and among people whom he knows, he can talk like a whirlwind; but he will not face the public, nor will he be a party to the all-pervading weakness of being written up. But it is only fair to say that he has declined every honour which was offered him except one—the Companion-ship of Honour, which was also conferred on that other distinguished South African, General Smuts. A criticism which I have heard made against Quinan, and which it is only fair to put on record, is that plenty of Englishmen could have accomplished as much, if not more, given the same opportunities. Perhaps they might, but I doubt it; for I only know one Quinan, and no man that I ever knew had his wonderful driving power. The only other criticism, and really a childish one, is that, why should an American have been called in? Well, he wasn't. He was invited, and his very nationality helped him along. I, personally, am not an admirer of some of his methods; but I do admire vastly what he has accomplished, and I repeat that I don't know any other man who could have done it. I have been a business rival of his for many years, and can therefore speak quite dispassionately on the question. South Africa, where he spent so many years, I know, is very proud of him; so is his own country, and I am sure that in attempting to sing his praises and to thank him for all he has done for our Empire, I am merely voicing in a very feeble way what

many feel. A few weeks ago the second report on Costs and Efficiencies for H.M. Factories was issued for private circulation. This is his *magnum opus*, but it is not yet permissible to comment on it. I am certain, however, that it will have as great an influence on technology as dozens of text-books, no matter how brilliantly written. I am also given to understand that a synopsis of much of the research work which was done in the department will appear at no distant date. Quinan had the prevision to see that this would be of use, and early in the war got permission from the Ministry to publish it at the appropriate time. For this we are all very grateful indeed."

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ANOTHER VIEW OF THE MINE.



THE WASHING PLANT.

WILL JOHANNESBURG LAST?—II.

The Sceptic Handled by an Optimist—Working Costs the Basis, not Profits—The Low Grade Ore Reserves—City Deep, Village Deep and Crown Mines Future—The Example of Glasgow.

[By a Correspondent.]

I CANNOT help thinking that your correspondent who has asked "Will Johannesburg Last?" and who has written such an apparently convincing "No" to the question either holds Crown Mines at £8 10s. or has been "bitten" on the property market, or else has become obsessed with Sir Theodore Martin's poetic study in annihilations, each verse of which ends with the pessimistic assertion "Even this shall pass away." In the course of time Johannesburg, like Nineveh and Babylon, and in communion with all the other great cities of the world will, I suppose, sink into oblivion if history has any application to the problem, as your morbid correspondent seems to think it has. But Johannesburg is not going to pass away in our life time: it is going to be the chief town of South Africa when our children's children have to earn their livelihoods, and I for one have no doubt that they will find Johannesburg a very remunerative habitation just as most of us have found it in the past and find it to-day—otherwise we should not live here. Why? Because Johannesburg is and always will be not only the centre of the Rand gold industry but the hub of South African commerce, and if Springs grows and Heidelberg becomes a big town they will only increase the prosperity of Johannesburg and not impair it. I, for one, do not believe that the Central Rand is worked out. Several of the old outcrop mines may be on their last legs, but there are other properties on their dip which will take the places of the declining surface ventures, and these will easily absorb more labour and spend more in wages and on stores than the comparatively small outcrop concerns. Your paper recently informed us that the City Deep was preparing to work at 7,500 feet. We know that the Village Deep Company, in its Turf Mines section, is going to take out more gold from under the Turffontein racecourse than ever was lost upon it, and we know too that the Crown Mines have a most extensive deeper level development project on hand. These operations alone will easily compensate for the loss of ten City and Suburbans and Village Mains. Your correspondent harps on the remarkable profitability of the Far East Rand mines. Let us for the moment admit this. But it should be borne in mind that we in Johannesburg do not live on the profits which the mines make, but on the working costs which these mines distribute, and the deeper level operations which I have referred to above will result in a larger distribution of wealth locally than the dividends of the New Modderfontein (most of which go overseas) will bring to Benoni or the working costs of old outcrops give us at present. It is absurd to imagine that the present period of labour agitation and of the maintenance of a standard price for our product whilst the costs of all other commodities rise will last for ever. Sooner or later Capital and Labour will arrive at some agreement satisfactory to both parties—this I firmly believe. Furthermore, we know that the world wants gold—and it is inconceivable that the gold industry will be allowed to languish by the Great Powers if this need is anything like so acute as many statesmen, bankers and clear thinkers contend it is. I cannot help thinking that such a development must come to pass and with it immeasurable tomorrows of low-grade Central Rand ore will be rendered profitable. The ores of the Central Rand are far from being exhausted, and it matters not whether there will be five or twenty-five mines working them. They will be worked and not only will the current costs of operating these ores find their way into Johannesburg coffers, but vast sums of money will be expended on machinery for the operation of the deeper

levels. But even if our Central mines are exhausted we shall still be the administrative, distributing, manufacturing and shopping centre for mines which may spring up further afield. The great City of Glasgow was originally founded on mining activity. No one would describe Glasgow as a mining camp to-day. But it is more or less the centre of a mining district and the coal and iron properties which are within fairly easy reach of Glasgow contribute to the prosperity of the manufacturing activity of Glasgow, which has become the second city of the British Empire. The same thing will happen here. Johannesburg is rearing up industries, and if your correspondent cannot see evidences of the growth of these industries in our midst he must be more than short-sighted—he must be absolutely blind. Printing works, breweries, the production of films, bacon factories, fruit orchards, foundries, brick works, fertiliser production, furniture factories, the iron industry that is to come—do these all count for nothing? I have lived in Johannesburg for a good many years and I have always noticed that the people of this town love to dwell on the fact that times are bad or are going to be bad. They delight in telling you how poverty stricken they are—that the market is bad, that the cost of living is too high, that wages are too low, that money is tight, and that the whole state of Denmark is in fact rotten. But in actuality what does one see? Crowded theatres, crowded racecourses, overflowing hotels. There is more money in this town than in any other town of like size in the world. And there always will be. That is why property values here are going to be maintained. That is why Johannesburg is going to last much longer than your correspondent's pessimism.

ONE WHO BELIEVES IN JOHANNESBURG.

PERSONAL.

Mr. A. E. du Pasquier, general manager of the British Westinghouse Company, and president of the S.A. Institute of Electrical Engineers, has returned to the Rand.

* * * *

Mr. J. Jervis Garrard, consulting engineer to the "T.C.L." and president of the Geological Society of South Africa, leaves next week for England on a six months' trip.

* * * *

Colonel T. J. Curran, who will be remembered in business circles in Johannesburg, has returned from four years' active service and started business as a land, estate and financial agent at Goodman's Buildings.

* * * *

Mr. F. R. Lynch leaves shortly on a six months' visit to England.

* * * *

The list of certificates issued by the Mines Department for the month ending 30th April, 1919, is as follows:—
Mine Overseers' Certificates (Metalliferous): W. C. Bovey, F. R. Childe, R. A. King, G. Lewis, R. A. Lister, D. A. Baron-Lowe, D. Maenab (vertical shaft sinking only), G. Utterström, W. F. Visser, H. G. Whittaker; (Coal): J. Gemmell. Mine Surveyors' Certificates: N. Landau.

THE POSITION OF THE SPRINGS MINES.

Report by the Consulting Engineer on the Outlook for the Mine.

In consequence of numerous inquiries having recently been received from shareholders as to the present position of the Springs Mine, the Directors requested Mr. Carl R. Davis, upon his appointment as Consulting Engineer, to report generally upon the property. Mr. Davis's report, now submitted to the Board, and by them to the shareholders, is as follows:—

As requested, I have, in so far as the time at my disposal would permit, made a general examination of Springs Mines, and endeavoured, in a broad way, to analyse the factors which enter into the present condition of the affairs at the mine.

ORE RESERVE.

As recent months have witnessed a decline in the yield, it seemed desirable to re-estimate the ore reserve, and the re-calculation as at 28th February gave the following result: Fathoms on dip, 141,145; stope width, 62.87 ins.; stope value, 8.69 dwts.; stope tons, 2,256,062; Inch-dwts., 546. In order to make this estimate comparable with the ore reserve as at 31st December, 1918, the tonnage developed during January and February last is deducted from, and the tonnage stoped from the ore reserves during the two months is added to the above figures. The result may be summarised as follows: Ore reserve, 31st December, 1918: Stope width, 61.25 ins.; value, 9.26 dwts.; tons, 2,367,636; inch-dwts., 567. Ore reserve, 31st December, 1918, based on data, 28th February, 1919: Stope width, 62.80 ins.; value, 8.72 dwts.; tons, 2,222,028; inch-dwts., 548. It will be noted that the value over the increased stoping width is lower by 0.54 dwt. On the old stoping width the value would have been 8.95 dwts., or only 0.31 dwt. lower than as at 31st December, 1918. Generally speaking, however, the somewhat lower calculated value of the reserve is due to the lower value of the stope faces during the first quarter of this year. In view of this, and having regard to the personal equation, the re-calculation may be said to fairly confirm the original estimate. The ore reserve as at 31st December, 1918, contained 1,117,000 tons of ore of an average value of 9.76 dwts. not available for stoping, comprising shaft and haulage pillars and blocks of ore indicated. The available ore amounted to 1,251,000 tons of an average value of 8.81 dwts. Although this tonnage was considered ready for stoping, the transport facilities are not adequate to allow of some blocks included in this category being drawn upon to an extent proportionate to their contents.

YIELD.

The yield will be influenced by the variable percentages drawn from the payable ore reserve, development and other sources. When conditions permit the mining of average grade or from the reserve, the indicated maximum yield is 39s. 4d., the minimum 35s. 3d., and the average (say) 37s. 4d. over a lengthy period. Monthly results may show greater variations than are indicated by the above figures.

SHORTAGE OF STOPE FACES.

Subsidiary development in the payable reserve is not yet sufficiently advanced for the economic extraction of the requisite tonnage for the present milling capacity. In other words, there are insufficient available stope faces in areas which have adequate transportation facilities. This operates to the disadvantage of the mine in several ways: (a) As practically all the available faces are being worked, there can be no real control over the grade of ore mined, and this may, and does, vary monthly as the stope faces fluctuate in value, although over a considerable period of the time the average will probably closely approximate the estimated value of the reserve. (b) Difficulties with the hanging wall in important stopes may have an adverse effect on the tonnage mined over short periods. The position in regard to the tonnage production from stopes has been carefully examined. Indications are that the maximum difficulty in regard to

breaking the required tonnage will occur about the mid-year. An analysis of the life of the present stopes, and anticipation of new areas to become available on the completion of development in hand, indicates that the position should gradually change for the better after the period mentioned.

SUBSIDIARY DEVELOPMENT.

Steps are being taken to improve the transport facilities for different stopes in the mine. At the north shaft district a connection is being effected between the west haulage and the 6th level to provide a direct outlet for the ore from this important shoot. The 7th level west, serving a large payable area, is being extended to a connection with the main incline, and appropriate bins are being provided. At other points subsidiary development is being undertaken to prepare for stoping blocks of ore at present unavailable. Other measures, more fully dealt with under "transport," will also have a beneficial bearing in this respect. The need of more extensive subsidiary development has been recognised for some time, but the possible footage to be accomplished is limited by the existing compressor power. At present stoping is being done on two shifts, which, apart from being expensive, is not conducive to high efficiency. The erection of a large additional compressor, which was seriously delayed by the strike in the building trade, is now in hand, and on completion of this work the position should be considerably improved.

STOPING WIDTH.

The condition of the hanging wall is such as to call for special care and to necessitate extensive support. Hammer work having proved inefficient, practically all stoping is being done by rock drills. In special instances light hammer drills are being used but by far the greater portion of the ore is being broken by heavy drills. This fact, combined with the natural conditions of the hanging wall, accounts for the stope width being greater than originally estimated, and explains the high percentage of waste sorted on the surface.

TONNAGE FROM DEVELOPMENT.

The tonnage obtained from development is a material factor in the mill mixture, and has an important bearing on the total tonnage milled, both in respect of tonnage and grade, according to whether a greater or lesser number of development faces are in the pay shoots, in the intervening unpayable areas, or in country rock. The bulk of the unpayable rock obtained in development is wound at No. 1 shaft and discarded, this tonnage varying from 4,000 to 7,000 tons per month.

THE LAY-OUT OF THE MINE.

The main arteries of the mine, in respect to travel of workmen and the transport of material and rock, are driven as straight line headings on reef, conditions permitting, and equipped as endless rope haulages. In view of the flat dip of the reef, accompanied as it is with local changes of strike and dip, the lay-out is eminently suited to your conditions. The natural conditions, however, result in the haulages undulating in a vertical plane, the result of which is to make them less efficient and serviceable than haulage levels driven on a uniform grade. The construction of the latter, however, except to meet special conditions, would involve expenditure out of proportion to the benefits to be derived. The subsidiary development consists of straight line headings with suitable connections to the haulages where payable ore shoots have been developed. These headings are, as far as possible, on the reef and of varying gradients.

TRANSPORT.

In the Far East Rand, where the reef lies at a low angle of dip, the provision of proper transport facilities is essential to smooth and economic running. In a general way the lay-out of the present haulage systems at Springs Mines is

adequate to meet the tonnage requirements, but there are minor difficulties in their operation, capable of rectification, which result in disorganisation and delay and are the root cause of a considerable increase in the working costs. The intermittent operation of the haulage system causes delays in the delivery of steel, supplies, timber and trucks to the working faces, with resulting loss of time and poor efficiency. The west haulage, south shaft, is too long, having regard to the severe gradients to be negotiated. This is being remedied by the splitting of the haulage into two portions and the installation of a separate gear. The 8th haulage west now delivers tonnage to the Main Incline, through which it is conveyed to the south shaft. The 8th haulage west is to have direct connection with the south shaft station by means of a cross-cut, the construction of which is in hand. This connection being at a higher level than the present shaft station, the tonnage from the cross-cut will be delivered to the present bins through an ore pass. The effect of this will be to reduce the load on the main incline—thus increasing its capacity in respect to the handling of tonnage from other districts—and to relieve the congestion in the shaft station. At the present time the north-west and south-west haulages deliver direct on to the west haulage. On the latter haulage a loading station is being constructed; a footwall cross-cut from same will allow the tonnage from the north-west and south-west haulages to be delivered into storage bins for transfer to the west haulage, and at the same time offer a point of attack for the development of a large promising area. The extension of the haulage systems whereby one haulage is dependent on other for a supply of trucks has made the problem of truck distribution in the mine an extremely difficult one, and this, resulting as it does in congestion at one point and shortage at another, is one of the principal factors in the poor efficiency obtained throughout the mine. This difficulty will be met in time by the independent outlet for the 8th west haulage and the storage bins for the north-west and south-west haulages and 7th level west. Serious delays in the operation of the haulages are due to the bad condition of the wheels of the mine trucks. This position is, in a measure, due to the difficulty experienced during the war period in obtaining suitable equipment. Special attention is now being paid to the betterment of the present rolling stock, and new material, on order for a long time past, is expected within the next few months. I have dwelt at some length on the difficulties of transport and truck distribution because, in my opinion, this is the primary cause of many of the present troubles, as every department of the mine work is seriously affected thereby. The difficulties enumerated are not insuperable, and will be remedied; they can only be regarded as a temporary phase in the history of the mine.

WINDING CAPACITY.

The winding capacity of No. 2 (south) shaft is ample to meet requirements. The capacity of the shaft station will at a later period be increased by alterations to facilitate the handling of men and material.

WORKING COSTS.

Excluding the item of "Development Redemption," the operating costs at the mine are much above the normal, due to (a) causes previously mentioned, (b) increased cost of stores, etc., due to war conditions. It may reasonably be expected that both of these items will in time show a substantial reduction, although the comparative narrowness of ore shoots, the irregularity of the deposit in respect to local changes in contour, the separate winding and discarding of a large tonnage of unprofitable development rock and the high percentage of sorting will make for a high level of costs.

DEVELOPMENT REDEMPTION.

In respect to the charge of 2s. 6d. per ton milled for development redemption, it is evident that this figure—which is variable, depending on the ore reserve position at each semi-annual valuation—will have to be increased in the near future, and the probable decrease of working costs will be correspondingly reduced. A reduction in operating costs, however, notwithstanding an increase in the amount of the development redemption, will have its due effect on the amount of distributable profit.

POSSIBILITIES OF DEVELOPMENT.

The possibilities in respect to the average results to be obtained from future development of the mine remain unaltered—in other words, the past year has not disclosed any unfavourable conditions with regard to the deposit which

would indicate that the virgin area to be opened up by future development should be of less value than the portion of the mine already explored. Turning from this broader aspect of the general possibilities of development to a more detailed consideration of those unexplored areas which, generally speaking, are comprised within or are contiguous to the present workings, the following may be noted: At various points in the mine development work has exposed payable ore, the extension shoots has been indicated in the ore reserve in a conservative manner. In view of the pronounced tendency of the payable ore to occur in more or less parallel shoots of great length in comparison to their width, I consider the prospects for the further development at the above points of a large amount of payable tonnage to be most promising. Some of these particular areas are: (1) The area contiguous to and extending beyond the 5th drive west and 5 raise 2 west. (2) The area bordering on the 7th level west and 7th raise 1 west. (3) The area indicated at the connection of the 9th level west and the north-west haulage. (4) The new pay shoot disclosed at the end of the east haulage No. 2 (south) shaft. This heading has been in pay ground for the last 750 feet, and still continues payable, but no information has yet been obtained as to the direction or extent of this promising shoot. (5) The district in the Tease Area opened up by the south haulage and the limited amount of work on the 14th level east.

NO. 3 SHAFT.

At the end of April the south haulage was about 1,500 feet from the position of No. 3 shaft, the latter having reached a depth of 1,034 feet. In the No. 3 shaft the Witwatersrand quartzites were found 400 feet nearer the surface than was the case in the No. 2 (south) shaft. The formation exposed in the South Haulage has, for the last 900 feet of advance, dipped to the north, and, in view of these facts, there is, if no serious faulting has occurred in the area as yet unexplored between the south haulage and No. 3 shaft, a reasonable probability that the depth of the latter will be less than that of No. 2 shaft. If this conditions obtains, and a good rate of sinking is maintained, the reef horizon should be reached by No. 3 shaft before the end of next year. The importance of this shaft as a factor in the extension of development operations and as a tonnage producer, aside from the betterment of working conditions in the present southern section of the mine, is obvious, and its influence on the future position of the mine should be given due weight.

GENERAL.

The question of the location and probable time of starting the sinking of No. 4 shaft is under consideration. In view of the information derived from the present mine workings as to the average contour of the reef, local peculiarities and characteristics of the deposit generally, close attention is being given to the best method for the future development of the mine. No definite programme has as yet been determined upon, but in a general way it may be said that in future in subsidiary development more use will be made of contour (hand tramping) levels, and that straight line development will be used only in a minor degree to meet special conditions. As previously mentioned, the payable reef occurs in well-defined shoots relatively of great length in proportion to their width, and exhibiting marked parallelism in respect to their general direction or trend. The pay shoots are separated from one another by intervening stretches of unpayable reef. This characteristic of the deposit renders it inevitable that there will be, from time to time, very considerable changes, either favourable or otherwise, in the development and ore reserves positions of the mine, depending on whether a large number of development headings are traversing payable shoots or the intervening unpayable areas. In a comprehensive view of the value of the mine, these local fluctuations, whether favourable or otherwise, should not be given undue weight—rather should the value of the mine, especially in respect to future development and prospects, be measured by the average results obtained in the area explored to date. Under these conditions it is important and necessary to safeguard the position by building up an ore reserve of great strength in comparison with the milling capacity in order that the recurring periods of unfavourable development, even if prolonged, will not have an undue effect on the current results.—Yours faithfully,

CARL R. DAVIS,

Consulting Engineer.

HOW TO RUN A MINT: LESSONS FROM CANADA.

Regulations in Regard to Deposits of Gold Bullion and Coin of the Royal Mint, Ottawa Branch.

Now that the Union Government has definitely decided to start a mint, the following extracts from the regulations for the receipt and coinage of gold at the Ottawa Branch of the Royal Mint, established by Order in Council, may be of interest and value:—

(1) Gold in deposits of not less than one ounce troy may be brought to the Mint daily, Saturdays, Sundays and holidays excepted, between the hours of 10.30 a.m. and 3.30 p.m., and on Saturdays between the hours of 10.30 a.m. and 12 noon.

(2) Each parcel requiring a separate assay shall be regarded as a separate deposit.

(3) The contents of each deposit shall be determined by the report of the assay department, and such reports shall be final. Decimal assay reports shall be made upon gold to the one 2,000th part, and upon silver to the one 1,000th part.

(4) Charges: (a) The minimum charge for any one deposit shall be one dollar. (b) For the assaying, refining and coining of gold bullion the charges shall be 4½ cents for every ounce troy, gross, where the amount of the separate deposit brought at one time does not exceed 500 ounces troy, gross, and 3½ cents for every ounce troy, gross, in all other cases. Provided that, of these charges, 3 cents for every ounce troy of gold of standard fineness where the amount brought at one time does not exceed 500 ounces, and 2 cents in any other case, shall be considered to be an assaying and coining charge under Article 5 (i) of the Royal Proclamation of 2nd November, 1907. (c) For the assaying and refining of gold coin, the charges shall be 3 cents per ounce troy, gross, where the amount brought at one time does not exceed 500 ounces troy, and 2 cents per ounce troy, gross, in all other cases. Note.—The gross weight herein mentioned shall be defined as the gross weight of the deposit after melting. (d) For deposits which require toughening or other treatment, in order to secure a trustworthy assay, or to render the metal fit for coinage purposes, a further charge of 3 cents per ounce troy shall be made on the gross weight of the deposit before melting. (e) The charges, as in this regulation hereinbefore set out, may be paid in advance, or may be deducted from the amount paid out to the depositor.

(5) The equivalent of the deposit—less the Mint charges unless the same shall have been paid in advance—shall be paid to the depositors in coin or by cheque at the rate of one dollar for every 23·22 grains of fine gold, being equivalent to \$20·6718 per ounce of fine gold.

(6) A deposit receipt shall be furnished to the depositor, showing the number or numbers and the weight of his deposit or deposits before melting.

(7) A memorandum of the out-turn of the deposit or deposits shall be forwarded to the depositor after the metal has been assayed. This memorandum shall set out: (a) the weight before melting; (b) the weight after melting; (c) the assay report—gold and silver; (d) the gross value of the deposit calculated on the basis above stated (Regulation 5) for gold, and for silver at a rate per fine ounce troy equivalent to one-half cent per fine ounce below the New York market price of that metal for the day on which the deposit was received at the Mint; (e) the Mint charges; and (f) the net amount to be paid to the depositor, and an intimation of the date on which the amount shall be payable to the depositor.

(8) Payment shall be made within 14 days after the receipt of the deposit at the Mint, unless the deposit requires special treatment, or unless delay is occasioned by accidents to machinery, pressure of work relating to subsidiary silver and bronze coinage, or other unavoidable cause.

(9) All deposits shall be dealt with strictly in order of priority of receipt of metal.

(10) Deposits made during the last 14 days of March or September shall be reckoned as received on the first day of April or October following if stocktaking is in progress during the said 14 days.

(11) In the case of bullion or coin forwarded to the Mint by freight cars, express companies, or other indirect method of transmission: (a) the bullion or coin shall be packed with sufficient care to ensure its safe delivery at the Mint; (b) an invoice shall be posted to the Mint stating full particulars (including weight) of the consignment; (c) any expenses incurred in transmission of bullion or coin to the Mint shall be defrayed by the depositor.

(12) If coin be required in payment of any deposit such coin shall be delivered at the Mint to the depositor or to his duly authorised agent under the following conditions: (a) in all cases the original deposit receipt shall be presented at the Mint either by the depositor or by his agent before the net value of the deposit may be delivered out by the Mint; (b) if an agent be appointed to receive the proceeds of a deposit such agent shall be provided with a written authority to collect on his behalf; (c) the Mint authorities shall be directly notified by the depositor of the name of the person or firm thus appointed by him to receive from the Mint the net proceeds of his deposit, as in these regulations provided.

(13) The revenue from charges collected by the Deputy Master under these regulations shall be paid over to the Minister of Finance after the 30th June and the 31st December in each year.

The Mint Regulations of 24th June, 1913, for deposits of gold bullion were amended by the addition of the following scale of charges on April 13, 1918:—

CHARGES ON FINE GOLD BARS 992 AND UPWARDS.

Melting Charge. 1·00 dollar on each melt of 1,000 oz. troy or fraction thereof.

Alloy Charge. 2 cents per ounce of copper required to make into coin (to be determined by taking 1/10th of standard weight of gold, except where base in deposit is all good copper, when the method of determining the number of ounces of copper required shall be by taking difference between standard weight and weight of deposit).

A charge of 1·4 to 2 cents per ounce on brittle bars, the adjustment of this charge depending on the difficulty of rendering the bars ductile, to be left to the Deputy Master of the Ottawa Mint.

The Truth About Miners' Phthisis.

Sir Robert Kotzé, in his report to the Phthisis Commission, answers very plainly the question as to whether miners' phthisis is decreasing. He says his proposal presupposes that phthisis is still being caused on mines, "and appears to be at variance with the opinion I have recently expressed before the Select Committee on Miners' Phthisis, to the effect that a man who looks after himself need not fear contracting the disease in taking up underground work on the Witwatersrand as his occupation. To that opinion I adhere, but there are many men who do not look after themselves, and who take advantage of any slackness of supervision on a mine by breaking the regulations and jeopardising their health. The bulk of the men, moreover, who will be added to the number of beneficiaries will be drawn in the near future, at all events, from amongst those who have spent part of their time underground some years ago, before the preventive measures now in use had been applied. It is probable that a man who, in some measure, has already developed miners' phthisis, will continue to get steadily, if only gradually, worse, even in the best underground conditions on the Witwatersrand. His powers of resistance have been impaired, and his chance of escaping the disease is not the same as that of a man now commencing work underground. Examination of the statistics of the Miners' Phthisis Board indicates that during the past twelve months there has been an increase in the number of awards to beneficiary miners. The diagrams attached to this statement show the number of such awards since April, 1914. Separate diagrams are shown for the (a) cases, the (b) cases, and the combined (a) and (b) cases. Since August, 1916, the comparison has been vitiated to some extent by the inclusion of tuberculosis cases, designated as 9 (1) (f) cases. As pointed out in paragraph (2), on page 9, of the last annual report of the Board, the true number lies somewhere between the figures obtained by including and excluding these 9 (1) (f) cases, and I have, therefore, taken the mean between the two as the best figures for comparison. The figures for the individual months vary so irregularly that it is somewhat difficult to follow the general trend more clearly by means of the dotted lines. From these it will be seen that the primary silicosis awards have been on the increase since August, 1917, and secondary silicosis since January, 1917, while the sum of the two shows an increase since about June, 1917. This increase may be due to causes which have nothing to do with the incidence of the disease, such as greater pressure from the Medical Bureau to abandon underground work, or fear of a diminution of the present rate of compensation. It may, however, also be due to an actual increase in the incidence of the disease, and if it were, it would be foolish to shut one's eyes to the fact, instead of facing it and redoubling one's efforts to ascertain the causes of the disease and its remedies."

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THE TRUTH ABOUT SOUTH-WEST DIAMONDS.

Findings of the Parliamentary Select Committee—Who Sold the Shares?—Why the "Goldfields" Went In—Protectorate Administrator and Mine Inspector's Opposition—The New Assets of the Company.

SEVERAL interesting facts emerge from the evidence given before the Select Committee on Public Accounts in regard to the South-West Diamonds flotation and flutter on the Johannesburg Stock Exchange. It appears that Mr. A. M. Carroll, the discoverer, was introduced to Mr. W. R. Burch, M.P.C., by Mr. W. J. Howie, and that Mr. Burch, after many months of effort, succeeded in convincing the Government that the grant of a concession was desirable in order to test the possibilities of the asset represented by the diamondiferous deposits under the sea off the south-west coast. To continue the story in Mr. Burch's own words:—

After hearing that the concession had been definitely granted, I took the steps necessary for the registration of the company, and to provide the necessary money for the demonstration of the discovery. I discussed the matter with several parties who were prepared to assist in financing the project, and it was felt that it would be unwise to have too small a capital. In negotiating the formation of the company, I stipulated the principle for Mr. Carroll that whatever the size of the company he was to have half interest for his discovery, and the people financing the venture the other half. It was thought advisable, as I said before, that the capital should not be too small, and if the discovery was demonstrated, it was felt that at least three dredgers should be obtained at once, and that as these dredgers would cost about £30,000 apiece, the sum of £90,000 would be required. It was accordingly decided that £125,000 working capital should be provided, which would allow the necessary money for the demonstration, and a further amount for the provision of the dredgers, if the demonstration was successful. The question of where the company should be registered was also considered, and it was decided that it should be the Cape Colony, as it was the wish that the diamond laws of the Colony be applied to the company. As a result of various negotiations and suggestions out of the £125,000 working capital, £40,000 was subscribed or guaranteed for demonstration purposes, the subscribers having the right to subscribe nearly all the remaining working capital of the company, should the demonstration work prove successful, thus adhering to the principle that I had originally advanced on Mr. Carroll's behalf.

Of the £40,000, £10,000 has already been provided and a further £30,000 has been guaranteed by the Consolidated Goldfields, Ltd., and Mr. Hughes as and whenever we require it.

It was felt that in view of the large vendor interest and in view of the fact that there was no restriction by the law of Cape Colony against vendors immediately dealing in their shares, for the protection of shareholders, and also for the protection of the *bona fides* of the company, the vendors' shares should be tied up. Mr. Carroll accordingly agreed to deposit all his shares in the bank until 30th June, 1919, and not to deal in same. The original intention of the parties was to allow no share dealings until Mr. Craig's report on the investigations he was making was received.

Mr. Craig, I may mention, is the engineer who has been appointed to investigate the whole question upon the coast.

In my opinion it was an error to have any dealings at all until this period, but the effect was never anticipated. It was realised that the venture was one with great possibilities and yet a very speculative one, and accordingly no subscriptions were invited from the public, nor was any quotation applied for on the Stock Exchange, nor was any prospectus issued. Even though no official quotations on the Stock Exchange were allowed by the company, the shares were rushed largely by the public.

Mr. Merriman: What do you mean by "rushed"?—They tried to get hold of them.

Immediately it became apparent that gambling in these shares had commenced and was likely to increase, the Cape shareholders, of whom I am one, communicated with the chairman, and he immediately informed the press that all share dealings were strongly deprecated by the Cape shareholders, who declined to participate, and further pointed out that the venture was a speculative one.

I hand in copy of the telegram which Reuter's circulated throughout the country in that connection.

Mr. Creswell: What date was that?—Wednesday, the 12th February. I declined then and since to have anything to do with disposing of the shares at a premium. The shares at the time the telegram was dispatched were standing at about £4 or £4 10s. I would like to make what appears to be an anomalous position clear. The company refused an official quotation from the Stock Exchange, but brokers were able to deal with these on the floor of the Stock Exchange, although they were not on the official exchange list.

Mr. Merriman: How many shares are there?—Just before I left Johannesburg I received a letter, dated the 16th instant, from the manager of the National Bank, Johannesburg. The letter is as follows:

"We beg to advise you that in accordance with arrangements, all the shares relative to this company were deposited with this branch of the bank in safe custody. On instructions received from Mr. D. Christopherson, of the Consolidated Goldfields, and Mr. A. C. Hughes, a total of 7,400 shares were released; of this number 4,400 were dealt in outside the ordinary channels." I may mention that I made further enquiries in regard to this matter in Johannesburg, and I understand that the 4,400 shares were allotted to various people who approached Mr. Hughes and Mr. Christopherson—people who wanted to come in owing to the fact that there was no public subscription—at £2 apiece. Apparently, that started the ball rolling and gambling commenced; the position got beyond control, owing to the shares rushing up, and from time to time 3,000 further shares were allowed to go out, which, I understand, realised an average price of between £4 and £5.

Mr. Creswell: Whose shares were they?—I could not tell you. There was an arrangement made between all the parties under which all the shares were pooled, but as I declined to participate in the pool, I have had no statement. I have not participated in this at all. I think the information is easily obtainable from the parties. I think the share register will show it.

Not necessarily?—It will show some of them.

Mr. Merriman: This was done in violation of an agreement previously made?—Unfortunately, there was no specific agreement. There was an understanding, and it was the intention of all parties that there should be no share dealings until Mr. Craig's report was received, but, unfortunately, Mr. Christopherson and Mr. Hughes were worried by people who wanted to come in and who accused them of keeping this to themselves. After they allowed 4,000 shares to go out, the matter was beyond their control. At this stage I would like to complete my statement:

"This statement was communicated to the Press by telegram and circulated throughout the country, but it did not seem to have any great restricting effect, and even after publication of this statement, the shares rose from £4 to £8, so that it must be manifest that the public rushed them in spite of Mr. Hughes' warning. The matter, however, was one entirely beyond the control of the company.

When I was in Johannesburg I also discussed this matter with Mr. Christopherson, of the Consolidated Goldfields, and he wrote to me on the 16th instant as follows:—

"I understand you are leaving for Capetown to-night. I hope the directors will take steps to see that certain statements made in the House of Assembly which are not in accord with real facts are put right whilst the Public Accounts Committee are going into the question of this concession. From the telegraphic information which appeared in the local press there seems little doubt but that certain members of the House are entirely wrong in their ideas as to the intentions of the company formed to prove the value or otherwise of the concession granted to Mr. Carroll. So far as my company is concerned, and I have repeatedly told you this, they did not take a participation with a view of a market gamble, but with the intention of providing money to prove the value of the proposition. It is no new idea as to what the possibilities of this venture are. As long ago as 1910, Sir Drummond Chaplin, who was then one of the joint managers of this company, wrote to the Government to see whether some arrangements could not be come to as regards prospecting for diamonds in these areas. The late Dr. Constance was with us then and he advised Sir Drummond to apply to the Government as he had heard rumours of Carroll having found diamonds. The Government could do nothing then, but we subsequently heard that De Beers had a man up there at the time making a report as to the prospects of recovering diamonds in those areas."

Sir Edgar Walton talked of the "huge" gamble there had been in the shares up here. Personally, I believe it has been largely a gamble on paper, and only a few shares have changed hands. Is it possible that a "huge" gamble could have taken place and not have had many protests in the press and otherwise from the public when the shares dropped in about 12 hours from £8 odd to £4? I have not heard a single protest. I am satisfied as to this, that the South-West Diamonds Company has in no way encouraged a gamble; on the contrary, those responsible for putting up and guaranteeing up to £40,000 to prove the property have strongly deprecated any market dealings. It looks to me as if a small clique on the Stock Exchange manipulated the price. My company have taken up 2,500 shares and have guaranteed to take up a further 15,000 shares under option as and when required, with the one object of proving the value of the concession and not with a view of a market gamble. If the concession proves valuable, we shall do well in taking this risk, but so will the Government. The Government are on velvet and so are the vendors. The only parties who are not are those who have taken the risk of putting up cash to prove the value of the proposition, and we are one of those parties. It must be remembered that the risk is not confined to proving whether diamonds are there in payable quantities, but, what to my mind is a further big risk, as to whether or not they can be recovered in payable quantities.

ties. I foresee lots of difficulties in the latter connection. I, therefore, trust the directors will take what steps they can to show that this company was formed with the honest intention of carrying on operations in a genuine way, and not as Sir Edgar seems to think, with a view to a market gamble. I agreed, on behalf of Gold Fields, to put up cash for working capital without any interest in the vendors' interest, because, in the first place, the agreement with the Government appeared to me to be fair to both sides—so much so that there could be no doubt as to the Government's *bona fide* intentions of carrying it out and being able to carry it out—as the opposition could only come from interested parties in the diamond market, and seeing that the terms were so favourable to the Union Government, there was no question but that such opposition would have to be discounted to a great extent. In the second place, because in view of all I had heard and read (especially in Wagner's book), as to the origin of the diamonds found in West Africa, there was good reason to think that the venture might prove at least payable with the off-chance of it turning out better than we had hoped for.

THE OTHER ASSETS.

In reply to the question "The only asset the company has is the concession?" Mr. W. R. Burch said: "No, the company has other assets. Owing to our having a big capital, we did not confine ourselves to this sea venture. We have purchased eight diamond areas in South-West Africa for £18,000, which are now producing diamonds and seem to be turning out well. Our shareholders are not confined to the success or otherwise of the sea expedition."

ADMINISTRATOR'S OPPOSITION.

In the course of his evidence the Secretary for Mines described the attitude of the Administrator of South-West Africa to the concession.

In regard to Carroll's application, was the Administrator asked for his opinion?—Yes, we sent the papers to him.

What did he say?—He enclosed a minute from the inspector of mines with which he said he agreed. In his minute Mr. Langley pointed out that upon Possession and other islands deposits identical with those on the mainland occur. In 1910 an expedition had been fitted out by the Government to exploit the islands, with the result that 180 carats of small stones were discovered. Further work was abandoned as, besides disturbing the guano producing birds, the expedition was a financial failure.

What was his view in regard to the policy of granting the concession?—The inspector's summary is as follows:—

From the foregoing it is seen that the occurrence of diamonds on the islands and shore, as well as in the territorial waters, has been known for a number of years. The exploitation of the islands has been proved to be in the interests neither of the Government nor prospector. The foreshore is disputed ground which would not be open to prospecting by the public even if a settlement were arrived at. The territorial water rights have not been decided. If it were agreed that the territorial waters belonged to the Protectorate and that it was in the interest of good government to permit dredging, the following must be considered:—(1) The area in question is outside the Sperregebiet. The tax therefore would be 33 per cent. of the gross proceeds and 5 per cent. for the Regie. (2) The existing proclamations and prohibitions governing prospecting and producing diamonds would have to be repealed. (3) The Administration can only sell 30,000 carats a month from the companies

at present producing. The limited sales have an effect on revenue owing to the heavy overhead charges which would be almost the same for the maximum output. If other producers were allotted a portion of the 30,000 carats, revenue would suffer still more. In conclusion, I must point out that Mr. Carroll, of Capetown, has not made a discovery and he would not be entitled to any discoverer's rights. The working costs would be high and probably exceed the proceeds of sales from which he would have to pay 38 per cent. to the Government.

Mr. Gorges was against it and considered that it should be put up to tender. When this minute was written Mr. Carroll's application was for the whole coast, and for the territorial waters of the mainland only. The point in regard to the foreshore mentioned by Mr. Langley was not relevant, because he was told there were no foreshore rights in the question, and he could not land there. As regards the taxation question, 40 per cent. was ultimately arranged as the Government's share. The existing proclamations regarding the mainland would not have to be repealed as suggested by the inspector, because the application had nothing to do with the mainland. As regards the 30,000 carats, we did not want to diminish the output or the revenue of the existing companies, and, therefore, we subsequently inserted the condition that the Government would have to take over the diamonds and sell them when they chose.

FINDINGS OF THE COMMITTEE.

The concluding paragraph of the findings of the Select Committee are as follows:—

After very careful consideration, your Committee can only come to the conclusion that, in view of the uncertainty of the position both as regards the future of the territory of South-West Africa at the time and the entire absence of any law providing for and regulating permission for undersea dredging for precious stones, and having regard to the restrictions at present placed upon the production of diamonds from the mines in South-West Africa, in which the Government is so largely interested, it was undesirable to have made the grants to Mr. Carroll, which have been the subject of inquiry by your Committee. Furthermore, your Committee would point out that in the papers relating to this matter laid upon the Table of the House, a most important one, namely, the Report of the Administrator of the South-West Protectorate on Mr. Carroll's application, was not included. In conclusion, your Committee thinks it right to add that it has found nothing in the transactions under inquiry to justify any imputation against the personal integrity of any member or official of the Government.

The Modderfontein Deep Levels, LIMITED.

(REGISTERED UNDER THE LIMITED LIABILITY LAWS OF THE TRANSVAAL.)

Notice of an Extraordinary General Meeting.

In view of representations which have been made by many of the Shareholders in the Company, to the effect that at the Stock Exchange quotations ruling the negotiability of the shares is unduly restricted, it has been decided by the Board of Directors to submit to the Shareholders of the Company a proposal to sub-divide the existing £1 shares of the Company into shares of the nominal value of 5s. each. In the opinion of the Board this measure will be of particular benefit to the large number of small Shareholders in the Company, who are mainly resident in the United Kingdom.

NOTICE IS THEREFORE GIVEN that an Extraordinary General Meeting of the Company will be held in the Board Room, Consolidated Buildings, Fox Street, Johannesburg, on THURSDAY, the 17th day of JULY, 1919, at 11.30 o'clock in the forenoon, for the purpose of considering and, if deemed fit, passing with or without modification a Resolution to the following effect, namely:—

"That each of the 500,000 shares of the Company of £1 each, fully paid up, be divided into four shares of 5/- each, whereon 5/- is credited as paid up, and that the resulting shares be re-numbered accordingly."

Should the above-mentioned Resolution be passed in the manner required for the passing of an Extraordinary Resolution it will be submitted for confirmation as a Special Resolution to another Extraordinary General Meeting, which will be held at the same time and place on SATURDAY, the 9th day of AUGUST, 1919.

The Register of Members will be closed from the 15th to the 17th July, 1919, both days inclusive.

By Order of the Board,

UNION CORPORATION, LIMITED.

Secretaries.

per C. L. CHALMERS.

Head Office: 94 Main Street,
P.O. Box 1125,
Johannesburg, 16th May, 1919.

Southern Van Ryn Reef Gold Mining Company, Limited.

TENDERS.

Tenders are called for the dismantling and transport of one 35 Drill Compressor and Condensing Plant. Full particulars may be obtained from the undersigned.

C. J. TUTT,

Consulting Engineer,

P.O. Box 5754, Johannesburg.

THE APRIL GOLD OUTPUT IN DETAIL.

A Further Decrease—Operations on a Dozen Mines Result in a Loss.

THE gold output for April at 694,944 ozs. showed a decrease of 17,435 ozs., or £74,956, compared with March. There was one working day less in April. Twelve mines made losses. The group return of the Consolidated Gold Fields shows a loss of £4,205. Payable ore in the Ginsberg is exhausted and the directors announce that operations will cease at the end of the present month. The following were the aggregate figures of the April output:

Total output	694,944 ozs.
Value	£2,951,936
Decrease	17,435 ozs.
Value	£74,956
Witwatersrand	676,702 ozs.
Value	£2,874,447
Decrease	18,123 ozs.
Value	£76,981
Outside Districts	18,242 ozs.
Value	£77,489
Increase	688 ozs.
Value	£2,925
Stamps	8,264
Decrease	30

INDIVIDUAL RETURNS.

WITWATERSRAND.

	Value. £	Increase. £	Decrease. £
Aurora West	13,877	—	1,627
Bantjes	1,788	—	2,812
Brakpan	89,606	—	5,497
City and Suburban	28,765	3,294	—
City Deep	98,322	—	1,742
Cons. Langlaagte	55,547	—	527
Cons. Main Reef	75,185	382	—
Durban Deep	35,481	—	5,314
E.R.P.M.	139,914	—	10,190
Ferreira Deep	56,941	—	3,564
Geduld Prop.	63,113	—	441
Ginsberg	10,080	—	1,886
Government Areas	201,448	4,902	—
Knight Central	30,367	4,728	—
Langlaagte	52,332	—	2,799
Luipaardsvlei	20,797	410	—
Meyer and Charlton	10,082	714	—
Modder B.	131,375	—	2,710
Modder Deep	89,245	145	—
New Goch	13,771	—	429
New Kleinfontein	72,262	—	5,658
New Modder	175,300	—	10,377
New Primrose	17,161	659	—
New Unified	11,855	—	463
Princess	25,470	—	2,017
Roodpoort United	23,231	1,413	—
Rose Deep	63,261	2,756	—
Springs	67,721	—	3,904
Van Ryn	33,956	267	—

ASSAYER & ANALYST—Position Wanted.

Advertiser has had 10 years' experience as chief Assayer and Analyst on a base metal mine, also done a lot of sampling. Certificated, married, and had 18 months in Flanders.

Reply—ANALYST,

"S.A. Mining and Engineering Journal,"
Box 963, Johannesburg.

	Value. £	Increase. £	Decrease. £
Van Ryn Deep	103,560	—	2,072
West Rand Consolidated	38,421	535	—
Witwatersrand	10,732	1,356	—
Wolluter	35,794	—	812
Crown Mines	219,786	—	3,075
Goldenhuis Deep	54,447	—	6,894
Jupiter	23,953	—	2,808
Knights Deep	71,451	—	4,724
Nourse Mines	54,307	—	3,135
Randfontein Central	162,705	—	3,734
Robinson	42,189	—	1,520
Robinson Deep	62,578	2,885	—
New Heriot	14,850	—	1,963
Simmer and Jack	46,589	—	1,170
Simmer Deep	39,309	—	2,336
Village Deep	63,176	—	5,990
Village Main	23,239	—	1,232
Wit. Deep	37,049	—	773
Miscellaneous	9,162	3,611	—

OUTSIDE DISTRICTS.

Sub Nigel	21,480	837	—
Barrett	675	—	395
Glynn's	7,374	1,533	—
T.G.M. Estates	24,178	—	1,110
Miscellaneous	20,782	2,360	—

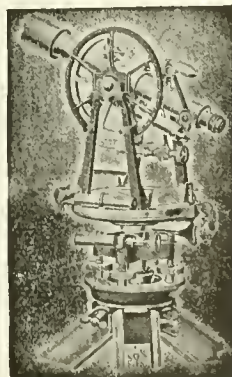
LABOUR FIGURES.

The number of natives employed on the last day of the month by the W.N.L.A. and contractors was:—

On gold mines	175,267
On coal mines	14,906
On diamond mines	5,742
	192,915

Wit. Deep April Loss.

The following are the results of operations for the month of April, 1919, at the Wit. Deep: Tons milled, 30,450; 5·729 dwts. per ton milled; working costs, £37,427, or 24s. 6·99d. per ton (decrease £916); working revenue, £36,496, or 23s. 11·65d. per ton (decrease £851); working loss, £931, or 7·34d. per ton. Development: Total feet driven, risen and sunk, 387 ft.; total footage sampled, 280 ft.; average width, 41·2 ins.; average value, 42·9 dwts.; number of stamps running, 200; number of tube mills, 5; stamps running time, 22·5 days.



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JOHANNESBURG.]

THE WEEK IN THE SHAREMARKET.

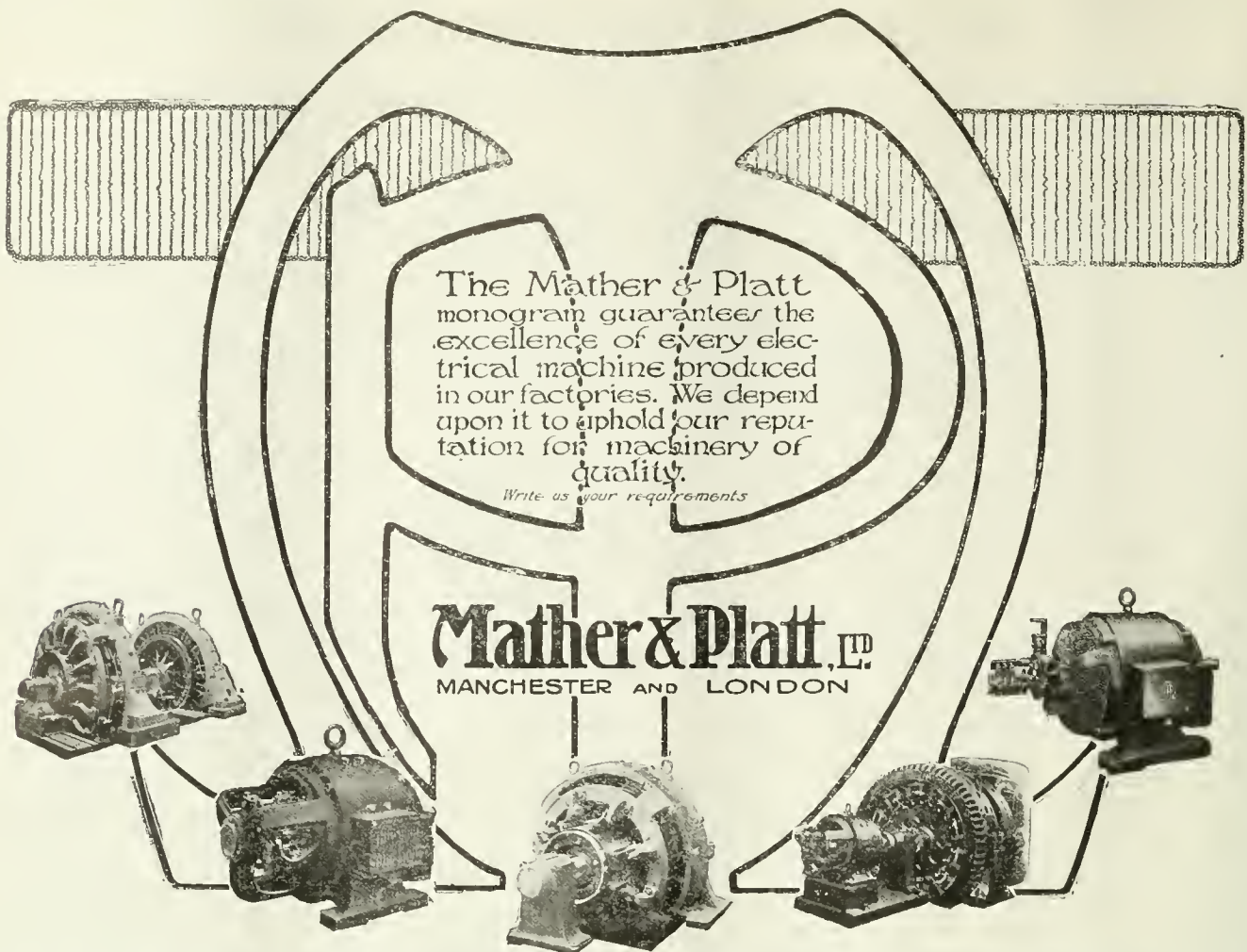
Somewhat Irregular—Advance in Geduld Props—Recovery of Crown Diamonds.

At the opening on Saturday the following sales were put through: Crown Diamonds, 91s. 6d.; Modder Easts, 21s. 3d.; three-year options, 3s. 3d.; and four-year options, 1s. 9d. At the call prices remained steady at former rates. Springs and Van Ryn Deeps and Modder Easts were the turn harder; Sub Nigels and African Farms weak. Later Sub Nigels dropped to 18s., but on supporting orders recovered to 18s. 9d. buyers. There was nothing doing at the opening on Monday, except a couple of deals in outside stocks. At the call Government Areas, Gedulds and New Modders went better and Consolidated Lands had a substantial advance. African Farms, Crown Diamonds and Sub Nigels continue weak. Modder Easts have called a halt for the time being. Business was brisker at the opening on Tuesday, with the following sales: Dagga Mines, 23s. 6d.; Frank Smiths, 4s. 8d.; Geduld Props, 47s. 3d.; Modder Easts, 21s.; Princess, 2s. 2d.; Makganyenes, 40s.; and odd lots of Sakalavas at 10s. The quotation for Government Areas was 92s. 6d., 93s. 6d. At the call Government Areas were largely bought with a commencing sale at 93s. and the closing one at 93s. 6d.; Geduld Props. were also in demand at from 47s. 6d. to 48s., closing buyers at the top figure. Crown Diamonds picked up a substantial amount of their recent shortfall with sales at 20s. 6d. Modder East options were bought at advanced rates, but the parent stock remained unchanged. On the losing side West Springs were distinctly weak at 20s., as also Southern Van Ryns at 8s. 3d. African Farms and Sub Nigels continue at their last figure. Geduld Props. were the feature at the opening on Wednesday with sales ranging from 48s. 6d. to 49s. 6d. The options, however, only responded in a mild degree with an advance of 3d. from 11s. 9d. to 12s.; Modder Easts were sold down from 20s. 6d. to 19s. 9d.; Zaaipplaats fetched 11s. At the call, besides Gedulds, New State Areas, Sub Nigels, Crown Diamonds and Van Ryn Deeps went better. Springs came lower. Modder Easts steadied and afterwards recovered to 20s. 3d. The market opened with a better tendency on Thursday. Crown Diamonds advanced from a commencing sale at 21s. to 21s. 6d.; Geduld Props made 50s.; Government Areas 93s., finishing at 93s. 6d. buyers. Modder Easts improved to 20s. 9d. sales and buyers. At the call the above prices were fully maintained. All the Modder stocks were firm, as also Van Ryn Deeps. African Farms, Leeuwpoorts, Sub Nigels and Lace Props continue on the weak side. The outside dealings for the past week consisted of sales of Makganyenes in odd lots at 50s. to 42s. 6d., and in hundreds at 10s.; Sakalavas were sold at 9s. 6d. down to 8s.; Koodoos, 21s. and 20s.; Monteleos, 10s. and 9s. 6d.; Theron Diamonds, 19s. 6d. to 17s. 6d.; New Farms, 1s. 6d. to 1s. 9d.; Union Tins, 5s. 3d.; South-Westerns, 57s. 6d. to 50s. Other quotations: Henderson's options, 10d.—1s.; Koodoo Vendors, 18s., seller; Phoenix, 1s. 3d.; New Farms, 1s. 6d., buyer.

The market was firm on Friday morning and actually strong in the Modder division. The Eastern lot might have been expected to go even better on the strength of the chairman's report at the meeting held yesterday. Alkalis are now at a big discount with overnight sales at 14s. 6d. The following stocks show alterations mainly to the good: Sales: Daggafonteins, 23s. 3d.; Geduld options, 12s. 3d.; Government Areas, 94s.; Modder Deeps, £7 17s.; Modder Easts, 21s. 3d.; three-year options, 3s. 6d.; four-year options, 5s.; New Modders, £26 10s.; Kleinfonteins, 9s. 9d.; New States, 23s. 9d.; Randfontein Deeps, 5s.; Rooibergs, 4s. 6d.; Sub Nigels, 19s. 10½d.; Springs, 49s. 6d.; Union Corporations, 15s. 6d.; West Springs, 21s. 6d.; De Beers Consolidated, £19 5s. Buyers and sellers: African Farms, 12s. 6d., 12s. 10d.; Anglo Americans, 22s., 23s.; City Deeps, 52s., 53s.; Main Reefs, 9s. 9d., 10s.; Consolidated Investments, 26s., buyer; Lydenburg Farms, 8s. 4d., 8s. 6d.; Lace Props, 19s., 20s.; Premier Pref., £7 2s. 6d., buyer; Sub Nigel (10s. paid), 10s., buyer; Alkalis, 15s., seller; West Springs Options, 6s. 6d., buyer; Zaaipplaats, 11s. 3d., buyer.

	Fri. 9th.	Sat. 10th.	Mon. 12th.	Tues. 13th.	Wed. 14th.	Thurs. 15th.
African Farms	13 0	13 0	13 0	13 0	12 9*	12 10
Anglo-Americans	21 0*	21 0*	21 3	21 6	21 6	21 0*
Apex Mines	7 0*	7 0*	7 0*	7 0*	7 0*	7 0*
Bantjes	2 2*	2 2*	2 2*	2 2*	2 1*	2 1*
Brakpans	61 0*	61 6*	62 0*	62 9*	62 6*	63 0*
Breytens	—	—	12 0†	12 0†	11 6†	11 0†
Brick and Potteries	—	—	4 0*	4 0*	—	4 0*
Bushveld Tins	1 6	1 4*	1 3	—	1 3*	1 3*
Cinderellas	3 3*	3 6*	3 6*	3 3*	3 6*	—
City and Suburbans	5 6*	—	5 6*	5 9*	5 9	5 9*
City Deeps	51 6†	—	49 0*	50 0	50 0*	51 0*
Clydesdale Collieries	—	—	23 6*	23 6*	23 6	23 6*
Cons. Investment	—	25 0*	25 0*	25 6*	—	25 0*
Cons. Langlaagte	17 3*	17 3*	17 0*	17 6	17 0	17 6†
Cons. Main Reef	9 9*	9 9*	10 0*	10 0	—	9 6*
Cons. Mines Selection	23 0*	—	22 9*	—	—	23 0*
Coronation Collieries	56 0*	55 0*	56 0	—	55 0*	—
Coronation Freeholds	1 6	1 6	1 6	1 6†	1 7	1 7*
Coronation Syndicates	—	—	—	1 6*	1 3*	—
Crown Diamonds	20 0	—	19 9	20 6	20 3	21 6
Daggafonteins	22 9	22 6*	22 9	23 0*	23 3	22 9
East Rand Coals	2 4*	2 4*	2 5	2 6	2 6*	2 8
East Rand Deeps	0 9*	—	0 9	0 9*	0 9*	0 9*
East Rand Minings	—	—	17 6†	17 6†	—	17 6†
East Rand Props.	6 1*	6 1*	5 9*	5 9†	5 0†	5 6
East Rand Debentures	£62*	£62*	£62*	£62*	£62*	—
Frank Smith Diamonds	4 9	4 8	4 4	4 7	4 4*	4 3
Geduld Props.	45 9	45 6	46 0	48 0	49 6	50 0
Ginsbergs	1 0*	—	1 3*	1 4*	—	1 0*
Glencairns	—	1 0*	1 0*	—	—	1 6†
Glencoe Collieries	6 0*	—	—	6 0*	—	6 0*
Government Areas	91 6	91 3	92 0	93 6	93 0	93 9
J'burg Board of Exors.	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	4 3†	4 6†	—	4 3†	—	4 3†
Klerksdorp Props.	1 1*	1 2†	1 1*	1 1*	1 1*	1 1*
Knight Centrals	7 10	7 7*	7 5	7 1	7 2	7 1*
Lace Props.	19 0†	—	18 3*	18 9	18 0*	18 0*
Leeuwpoort Tins	21 9	21 0	22 0	22 0*	21 6*	21 9*
Luipaardsvlei Estates	1 6*	—	1 6	1 6*	—	—
Lydenburg Farms	8 3*	—	—	8 3*	8 3*	8 5*
Meyer and Charltons	86 0*	87 0*	85 0*	86 0*	87 0*	—
Modder B.	156 6*	157 6*	157 6*	159 0†	156 0*	161 0*
Modder Deeps	153 0*	155 0*	155 0*	152 6*	153 0	153 0*
Modder Easts	21 1½	21 3	21 1½	21 0	20 0	20 10½
Do. Options (3 years)	3 4*	3 6†	3 3	3 4	3 0*	3 4
Do. Options (4 years)	4 9	4 9	4 10†	4 10	4 7*	4 10
Hume Pipes	29 6*	29 0*	29 6*	30 0†	30 0†	28 0
Natal Navigation Colls.	22 6*	22 6*	—	—	—	—
National Banks	£15*	£15*	£15*	£15*	£15*	£15*
New Eland Diamonds	26 0*	26 9*	27 0	27 0†	26 3*	27 0
New Eras	10 0	9 9*	10 0*	9 9*	9 9*	—
New Geduld Deeps	4 7*	4 6*	4 6*	4 8*	4 9	4 7
New Heriots	—	—	11 0†	—	11 0†	—
New Kleinfonteins	10 9†	10 6†	9 9*	10 0	10 0†	9 3*
New Unified	4 0†	—	4 0†	4 0†	4 0†	4 0†
Nourse Mines	13 0*	13 6†	14 0†	14 0†	12 0*	12 0
Premier Preferred	150 0*	150 0†	150 0†	140 0*	150 0†	150 0†
Pretoria Cements	67 6*	67 6*	67 6*	67 6*	68 0*	68 0*
Princess Estates	2 3	2 0*	2 1*	2 2*	2 1*	2 1*
Rand Collieries	—	3 6†	—	3 0*	3 6†	3 0*
Rand Nucleus	—	—	1 9†	1 9†	1 9†	1 9†
Randfontein Deeps	4 3*	4 6*	4 6*	4 6	4 3*	4 6*
Randfontein Estates	15 0*	14 9*	15 0†	14 9	14 9†	14 9†
Roberts Victors	—	14 0†	12 0*	13 6	12 0*	12 0*
Rooibergs	4 0*	4 6*	4 3*	4 7*	4 9*	—
Rooidepoort Uniteds	2 0*	—	1 9*	2 0*	2 0*	—
Ryan Nigels	3 3*	3 3*	3 3*	3 9†	3 3*	3 3*
Shebas	1 6	—	1 6*	1 6*	1 6*	1 9†
Simmer Deeps	1 6*	—	1 6*	1 6*	1 6	—
S.A. Lands	6 0*	6 0*	6 1	5 10*	5 9	5 11
Springs Mines	49 3	50 0	49 3	49 9	49 0	49 6
Sub Nigels	20 6*	19 3	19 0	18 9	19 9	19 6*
Swaziland Tins	20 0†	—	—	20 0†	20 0†	—
Transvaal Lands	27 6*	27 6*	28 9*	28 9*	28 9*	28 9
Transvaal G.M. Estates	14 0*	14 0*	14 6	14 6*	14 6*	14 6*
Van Ryn Deeps	68 3*	68 6	68 6*	69 0*	69 6*	70 0*
Van Dyks	2 9*	2 9*	2 9*	2 9*	2 9*	2 9*
Village Deeps	14 3*	15 3†	14 0*	14 0*	14 0	14 0†
West Rand Cons.	—	1 6	2 0*	2 9*	2 0†	—
Wit. Deeps	13 3*	13 9	13 3*	13 0*	12 6	13 6*
Wolluters	2 0†	2 0	—	1 11*	1 11*	1 11*
Zaaipplaats Tins	10 3*	10 3	10 3*	10 3*	11 0	11 4½
New State Areas	23 0*	23 0*	23 0*	23 3	23 3	23 6†
Southern Van Ryns	9 3	9 0	8 9	8 3	8 6*	8 6
S.A. Alkalis	20 0	—	19 0*	20 0†	16 0*	17 6*
Twecfontein Collieries	22 6*	—	22 6*	25 0†	—	24 6
Union Corporation	15 6*	15 6*	15 6*	16 3†	—	—
West Springs	21 6	21 6	21 0	20 0	20 3	20 6

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JOHANNESBURG.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

Will Johannesburg Last?—An Emphatic Affirmative.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I read the article with the above heading in your last issue with great interest. I quite agree with your correspondent that the subject is of sufficient importance to merit attention. It is, of course, very difficult to put down on paper and give a detailed list of reasons to prove that Johannesburg is going to last and increase in both size and importance. For the last twenty-five years I have heard the same old story that the mines were petering out, that the grass would be seen growing in the streets of Johannesburg, and yet to-day the town is more prosperous than it has ever been. The good old pessimists must let themselves go sometimes and when they start on their pet themes, such as "Johannesburg will be shortly ruined" and that "South Africa is drying up," they paint such deliciously gloomy pictures that people with more optimistic temperaments (or, should I say, better digestive organs?) are quite amazed. I quite believe that there is a possibility that some of the low-grade mines may have to close down unless something is done to avert this. Well, we have Sir Lionel Phillips in England dealing with this subject, and no doubt the Chamber of Mines are also making representations to the Government. There are, of course, several ways of preventing the closing down of low-grade propositions, and converting them into payable properties. The one way would be to increase the cost or price of product (gold) or decrease the cost of production. To raise the standard price of gold to £5, or even more, per ounce would soon enough make the low-grade mines payable. This is having the attention and consideration of the financiers of the world. With regard to decreasing the cost of production, this rests entirely with the people of South Africa themselves. We have all had enough of men like J. T. Bain and the leaders of the Labour unions; they have forfeited our sympathy, and men have themselves to thank for being so foolish as to follow these Labour dictators. Let us then do away with the colour bar and run the mines on sound economic lines, and there will be no such talk as to whether Johannesburg is going to last. There are thousands of white men who are nothing more than human drones living on the mines, earning large salaries and doing nothing for it. These so-called miners have an easy time, and most of them are inexperienced men. The trained miner earns his money and does good work, which every decent manager recognises and appreciates. In my opinion, if the Government were to alter the mining regulations and eliminate the colour bar, we should be able to work the low-grade mines at a profit, with benefit to not only Johannesburg but the whole of South Africa. I have had a good deal of practical experience at mining on these fields, and I defy any of these drones to contradict my statement that they do skilled work that the native cannot do. In fact, when I was contracting on the mines underground, the following was the daily routine of some costly and useless white men: They go into the mine early in the morning before the natives and estimate the amount of work the natives did the previous day (the white man does not work himself). When the natives arrive at their respective stopes the white man points out where the boys are to drill the holes (the native knows as well as he does). The boys rig up the machine themselves and drill the holes and attend to all the work of cleaning, etc., that there is to do. The white

man seeks out his fellow white man and they spend all their time in yapping, sleeping or playing cards (but always dodging the shift boss or mine captain). In the afternoon these drones go to their boxes to get out the dynamite, fuse, etc., and the boys fix all this up and often (provided the shift boss is not about) charge the holes ready for blasting. The white man fires the fuse and thus his day's labour is over. Under the supervision of good mine captains and shift bosses the natives could do all the work and without interference there would be more efficiency and an enormous saving of cost. If by the removal of the colour bar we are to be threatened with a revolution, then I say let us face it and be rid once and for all of these Labour unions, strikes, and disorganisations of trade and industry. Why do not the shareholders of the mines resolve not to sell their gold under £5 per ounce or £5 2s. 6d.? If Great Britain and the United States refuse to give this price, there are other inhabitants of the Globe who will give it. Johannesburg will last and prosper so long as there are gold mines to work, and it makes little difference if some of these mines are further removed. The administration will always be in Johannesburg and so will all the large mining machinery merchants, who can easily supply from their town depôts. The Government mint will shortly be started, and that will not only give greater prosperity to Johannesburg but will employ a lot of white people. We see also that there is to be a diamond cutting and polishing industry started, which will increase employment and add very materially to the prosperity of South Africa, and incidentally this town will also benefit. The Chamber of Mines have announced their intention of putting up a great building to cost a heap of money, which proves their belief and faith in the long life of Johannesburg. South Africa is expanding and developing its farming potentialities in every direction, and there is prosperity staring the country in the face. However the pessimists may try to argue to the contrary, the fact remains that Johannesburg is the largest distributing centre in South Africa and will always remain the commercial capital, for the simple reason that it possesses the wealth and the conveniences to expand trade and industries. We have one of the greatest electrical works in the world which can be used for all sorts of power. At the Vaal River we are constructing the greatest waterwork scheme that the country has ever seen, and there will be abundance of water to carry on any trades or industries. The Rhodesians are talking of sending a trade commissioner here in order to make this their commercial capital, and in time Johannesburg will become a world-distributing market. It is the duty of all of us, for our own good, to encourage and assist to finance every sound industrial proposition. We all know without my going into details that as the towns increase in population so the farmer has to grow more to feed the additional mouths, and in turn he has to employ more men, and thus the merchants have to provide more goods to meet the increased demands of the country people. This is going on all around us, and one has only to witness the excellent class of cattle, horses, sheep, pigs and poultry to see how the Transvaal farmer is forging ahead. The same applies to the enormously increasing fruit growing that is cropping up in every direction. South Africa is becoming an exporting country, and nothing is going to stop its progress and Johannesburg's prosperity. Now, Mr. Editor, your journal has always been an optimistic publication, and have we not seen for years past that the optimist is always right? It is up to you to refute the statements and gloomy outlook portrayed in your correspondent's article. I think you did wise to publish it, for it is just as well for the people of the country to know both sides.—Yours, etc.,

J. E. MILLER.

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The Rand and the Native.

In the March issue of "The Round Table," the contributor who furnishes the South African chapter, writing in December last, says: "A great change has come over the native people of South Africa in recent years. They are waking from a long sleep; to-day they have visions and aspirations which they did not possess twenty years ago. There is a new desire to realise themselves, a new race consciousness very much akin to movements which are taking place in India, in Japan, and in China." The writer discusses the passing of the tribal system, and the disintegrating process as the outcome of which, of a total native population of 4,417,665, there are to-day no fewer than 1,286,316 living on European farms, and 537,151 in urban and mining areas. "And removed from the tribal environment the native soon imbibes the idea that he is working for his own benefit." After a short survey of the native squatter system the writer says that the Native Affairs Administration Bill, founded upon the land recommendations of the Beaumont Commission, is admitted to contain much that is good for the administration and development of the native areas, but "it aims at squeezing out the detribalised native from European areas, except as a serf. In response to protests from all over the country," the article goes on to say, "the Government has withdrawn all consideration of this Bill until after the war, but it hangs like a sword over the heads of the natives, as an indication of future policy. It closes an avenue of progress which the detribalised native saw opening before him. It has destroyed his confidence in the goodwill of the Government toward him. It has incalculably increased the difficulty of ruling him, by giving him the impression that the Government is out to repress him." The article further deals with the colour bar in the industrial regulations of the inland provinces; emphasises the opposition by white workers to the advancement of the native in semi-skilled work in the mining industry; and alleges a

general unwillingness, in nearly every trade, to acquiesce in the progress of the native as he acquires skill and proficiency in the work he is given to do. This, it is pointed out, is bound to engender a feeling of discontent and unrest. Moreover, "during the war there has grown in the native mind a consciousness of a conspiracy to keep his wages down. He has felt the war prices just as keenly as the poor white population have." It is true that he has food and quarters provided for him, and that the increase of prices only personally affects him in the matter of clothing. But "natives come to the Rand to earn money to pay debts contracted by their families at home, where the war prices are felt," and this, it is submitted, should be borne in mind. The grievances here indicated are affirmed to be increasingly felt and expressed; "and in Johannesburg, where European methods of expressing grievances and forcing demands are carefully watched and studied, it is not to be wondered at that the efficacy of agitation should have been discovered. Johannesburg has become the centre of native political thought, and agitation and its problems are discussed round the fires at night in every distant corner of Africa. The native people were never more united than they are to-day; and unless something is done by the Government to restore the natives' confidence in its desire to help and not to exploit them, the outlook is a gloomy one."

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the S.A. Mining Journal. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

ENGINEERING SECTION.

COMMERCIAL AVIATION IN SOUTH AFRICA.

Establishing an Aviation Agency—The Safety Aspect of Flying—The Speed and Cost of Aeroplanes.

It must have been clear not only to students of aviation but to the public at large who have followed with almost breathless interest the stupendous achievements and development of aviation during the war that, with the cessation of hostilities peace flying both for business and pleasure is bound to be one of the large features of the post-war epoch. We have seen the initial development of peace flying in Europe during the armistice period. We have observed the inauguration of air mail services and the preliminary exploitation of the great commercial air routes of the world by a flight to India, and the planning of air excursions across the Atlantic and down the entire length of the African continent. That aeroplaning will develop with a speed at least as great as that of the establishment of motoring seems unquestionable, and in South Africa, which is a land of vast distances with abundance of safe landings and ideal flying climate, it is safe to predict that the aviator and his machine will before long become quite familiar objects of interest. Already a start in the direction of peace flying in South Africa for business or pleasure or both has been made by two ex-officers, Capt. Swart and Lieut. Guy Webb, who state that they are now prepared to take orders for any type of machine made by the leading manufacturers in England.

THE SAFETY OF FLYING.

In conversation with Capt. Swart, we were informed by him that the general idea that flying is unsafe is totally wrong. We asked Capt. Swart to give reasons in support of this contention, and he replied as follows: War flying was, to a certain extent, unsafe, as not only was the pilot subjected to fire from the ground but also from the air, and further the pilot was very frequently called upon to put severe, and in peace time totally unnecessary, strains upon his machine. Now that we have peace in sight, the flying man will not require to "loop," "spin," or in any way overstrain his machine. Another reason for the apparent unsafeness of flying during the war was that pilots were very fond of "stunting" their machines too near to the ground to be safe, with the inevitable result that when something went amiss with the pilot or his machine, it was, on account of the aeroplane not being high enough from the ground, impossible for the pilot to recover his normal flying position. This type of pilot will, I feel sure, have to be stringently dealt with, for until this reckless madness is put a stop to, the feeling that flying is unsafe will still continue. Capt. Swart assures us that the modern machine, which now has a factor of safety of 10 (which means that it can safely stand ten times its normal flying strain), flown in a rational manner and not looped and spun at too low an altitude, is the essence of safety. "Looping, spinning, rolling, and all stunting," he continued, "are in reality quite safe when carried out at 1,000 feet or over from the ground, but it is the man who wants to look big and who comes lower than this who propagates this erroneous idea of danger. You have him in your motor-eyelists and motorists, but the Police restrict him, and so also will the Police restrict the pilot of an aeroplane. Ninety-nine out of a hundred of the accidents which one sees reported in the daily papers have taken place through this recklessness of low stunting. The modern machine is a flying machine in the true sense of the word; it flies and does not fall to pieces, and the height at which the aeroplane flies makes not the slightest degree of difference to the safety of the aeroplane."

THE EXCELLENCE OF ENGINE DESIGN.

Can you tell us something about modern aeroplane engines, Capt. Swart?

"Aeroplane engines have so improved that they are absolutely reliable; in fact the design and reliability of engines have become so great that motor manufacturers have been forced to adopt the salient features of the aero engine to their own design. With good treatment an aero engine will outlast any car engine in reliability. In the early days engines played a great part in the so-called unsafeness of flying. Now this fault is permanently removed and flying has become as safe as any other mode of travel."

THE SPEED OF AEROPLANES.

"To the man in the street the mention of 100 miles per hour takes his breath away. But to the pilot, flying at 100 miles per hour there is no different to flying at 60 miles per hour; in fact, one seems in reality to be standing still in the air whilst the earth is slowly revolved underneath at whatever speed your machine is flying. Of course the speeds now attained annihilate distance, but the timid person need have no fear that he will become more nervy at 100 m.p.h. than he would at 60 m.p.h., for he cannot detect the increase in speed."

THE MODERN METHOD OF FLYING.

"Flying nowadays is taught in a far different manner to the early days. I would guarantee to teach anyone to fly in twenty hours, and not necessarily consecutive hours. One hour a day will suffice, but of course the more hours that can be devoted to learning the quicker will the learner become efficient. I am confident of turning out a capable flier in one week, provided he could spare three hours a day for learning. A modern pilot taught under the new system can now land his machine after twenty hours on any house without damage. A pilot taught in the new method now goes up in his aeroplane with as much confidence as he enters his car."

SOUTH AFRICA IDEAL FOR FLYING.

Capt. Swart has for a long time foreseen the possibilities and openings for flying in South Africa. On this point he stated: "Huge spaces and wonderful natural landing grounds abound in South Africa as well as an ideal flying climate. All the towns in South Africa are far distant from one another, but none of these towns are more than nine hours distant from Johannesburg by air. The reef being very populous but extending a large distance east and west from Johannesburg, either extremity is within twenty minutes' flight from Johannesburg, and every mine has a natural landing ground on its property. A traveller or representative can now leave Johannesburg at ten o'clock, spend an hour on the Far East Rand and be back in his office by 11.30. A week-end at Durban can be taken without interfering with business, and Capetown and return will occupy two days, with a comfortable bed at an hotel each night."

You think then that flying has now come to stay? "Undoubtedly," Capt. Swart and Lieut. Webb are now booking a few more orders on their first consignment for early delivery at their offices at No. 202, New Stock Exchange Buildings, Johannesburg, P.O. Box 2075, and will be pleased to advise clients of the best types of machines for their requirements. They also undertake to teach any customer to fly for a quarter of the fees of the ordinary flying schools.

PRICE OF AEROPLANES.

In conclusion Capt. Swart made a few statements as to the cost of aeroplanes. "Aeroplanes are now within the reach of anyone, and they soon will be coming to this country in large numbers," he said. "Prices range from £350 to £3,000 and £4,000. Each machine is absolutely safe, and the bigger-priced machine is the passenger-mail-freight carrying machine. In fact the price of aeroplanes is now

cheaper than cars in England, and manufacturers are going in for mass production. Each machine is thoroughly tested before leaving the factory, both on the ground and in the air, by certificated testers and examiners, and they will be tested again on this side before being delivered to the purchaser." We understand that Capt. Swart contemplates obtaining a fleet of aeroplanes for hire purposes, flown by skilled pilots, at competitive charges.

THE KALAHARI LAKE SCHEME.

A Discussion of the Arguments Against It—The Question of Comparative Cost and Advantage.

Mr. G. W. van Zyl, of Cradock, sends us some interesting comments upon the Kalahari Lake scheme which has been described by Professor Schwarz in the columns of this journal. After a lengthy discussion upon the air currents and other climatic conditions of South Africa which have a bearing upon the rainfall, but which limitations of space do not permit us to deal with in this issue, our correspondent proceeds as follows:—In the winter we have a surface north-wester blowing from the Tropic of Capricorn, which may at times come from further north, even from north of the lakes. In the summer we have surface north-westerns coming from the Kalahari, as likely as not from the lakes. This summer surface north-wester is the chief cause of more than half of our droughts—those that are not shown in rainfall records—and aggravates all of our droughts; for it is so dry that it dries up all the moisture from the soil and the vegetation. If Professor Schwarz's lake scheme turns it into a moist wind—well, that will mean the disappearance of our smaller droughts and the amelioration of the larger ones, without even increasing our rainfall at all. Now the area of Professor Schwarz's lake is 15,000 square miles. The area south and east of it in the track of the north-wester is only about 150,000 square miles in extent, or ten times its size. So taking the evaporation over the lake at 100 inches per annum, and supposing that only half that moisture comes south, it would be equivalent to a fall of 5 inches per annum over that area. Most of the vegetation in that area is peculiarly adapted to a dry climate, so if his lakes increase our October-November rainfall by about 3 inches, 95 per cent. of our droughts will be done away with. I have here rainfall records covering various periods from 42 years downwards for this part (N.E. Karroo). They show roughly that there are series of good years, followed by series of bad years. Each period, or decade, of odd tens is better than each period of even tens. But each recurring period shows less rain than the previous one. For instance, combining all the records I have on hand, the average rainfall for 1877-80 was 18.81; for 1881-90, 14.26; for 1891-1900, 14.96; for 1901-1910, 10.90; for 1911-1918, 14.62; or an average for the 42 years of 14.55 inches. This affords some evidence, although the records are too few in number and cover too short a period to be conclusive.

Now for a brief summary of the points raised by opponents of the scheme. (1) (a) That the "Karoo" and other vegetation of the semi-arid parts is so highly specialised that its very existence proves that semi-arid conditions must have prevailed for ages (Mr. Kanthack and Dr. Pole Evans). Quite so. But there is every reason to believe that that vegetation has extended its habitat within the last century, besides which there are areas where the local types of Karroo or other vegetation are obviously on the verge of "drying" out. Most types of Karroo exist in different parts with a difference of five or even more inches of rain, and their distribution seems to depend more on soil than rainfall. It is quite unlikely that an increase of five inches in the rainfall would have any other than a beneficial effect. (b) That irrigation kills Karroo (Mr. Kanthack). I don't know where Mr. Kanthack got that idea from, but it is certainly not correct. From personal experience I know that the opposite is the case. (2) That the winter gaugings of the Zambesi show the winter flow to be

11,500 cubic feet per second at the falls, while his lake would evaporate at the rate of 110,500 cubic feet per second (Dr. A. L. du Toit). Quite so. But the summer flow is about ten to fifteen times the winter flow. If this were deflected so that only the same amount went over the falls, there would be a substantial margin over the requirements flowing into the lake. This could be used for irrigation, after the lake began to run over. Once the flow became less than the evaporation this would stop; but the average depth of the lake itself would only need to be five or six feet to carry sufficient water to tide it over the winter months; besides, it is possible that a quarter of the water evaporated from the lake would come back to it again. Professor Schwarz estimates that it will take fifteen years for his lakes to fill. I don't see why that should not happen in one or two years. The floods at the beginning of last year could have filled half a dozen such lakes.

Now I shall compare the scheme with two in the Union. But in doing so I shall look at it in a much less favourable light than Professor Schwarz does. I will suppose that it can only lead to the irrigation of one million morgen (less than one-fiftieth of Professor Schwarz's estimate) and that it will cost £10,000,000 (forty times Professor Schwarz's estimate), also that it is not going to make any difference to our climate. That is about as unfavourable a view as one can take of it. Then it would mean an average cost of £10 per morgen irrigated. There are two schemes which have been brought to public notice recently within the Union. The Modder River scheme, near Bloemfontein, which it is estimated would cost £47 4s. per morgen irrigated; and the Calitzdorp scheme in the Cape Province, which irrigates 1,000 morgen and cost £160,000, *i.e.*, £160 per morgen irrigated. So even if the Kalahari scheme only led to the irrigation of one million morgen it would be incomparably cheaper proportionately than either of those schemes. If, as Professor Schwarz estimates, his scheme would irrigate 45 million morgen, it would have to cost £700,000,000 and more before it was proportionately as expensive as the Modder River scheme, or £2,400,000,000 before it was proportionately as expensive as the Calitzdorp scheme. So one can at once see that it has a colossal margin in its favour, even if it makes no difference to our climate. Yet the Government has discarded the idea because it is not "practical" politics. They have been just as unwilling as our scientists to consider the scheme on its merits. After all, it is a well-known fact that anyone, scientist or not, who starts a new theory or scheme is always opposed by the other "experts" of his branch of science, often with incredible bitterness. Once a man becomes an "expert" he seems to lose all common sense.

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Will Johannesburg Last?—The Bright Factors in the Outlook—Timber and Building Materials—Iron, Steel and Machinery—The American Cotton Crop—Trend of Business—Electrical Trade—Cement Gun.

The article in last week's *S.A. Mining and Engineering Journal*, partly entitled "Some remarkable contentions by a sceptic," has created considerable consternation amongst mining merchants and other merchants, as well as property owners. It is quite true it is a sceptical article. Although many of the statements are practically correct, yet, with reference to the assertion that within the next five years the majority of the mines in the Central Rand will be gutted and that before a decade has elapsed not more than half-a-dozen properties will be conducting gold mining operations on a large scale between Johannesburg and Boksburg—that is not altogether true. The worst part of the article is that it does not show any gleam of hope or sunshine for the alleged doom of Johannesburg. The remark that seems altogether out of place is that the local Press has probably had reasons for not directing attention to this matter. Against this statement the dailies and other papers invariably publish letters from correspondents when people have the courage to sign their names. Again, an objection is that the contentions by a sceptic give not a particle of the other side of the matter. That other side is that the pioneers and their descendants have hosts of live men amongst them and will endeavour to replace the Central Rand mining industry with many another industry, certainly quite sufficient to employ the 3,000 white men who may be displaced in ten years' time, when many of the mines will be closed down. At the present time very few mines have disappeared, because the original outcrop mines now live in their deep levels. The anticipated catastrophe will certainly be a slur on the manhood of Johannesburg if the dread forebodings mentioned in the article in question are to be realised. At this stage of the argument it must be admitted that when a mine opens up it does that particular area good, and the converse must of necessity have a bad effect when a mine closes down in any particular district. It says little for the mining engineer and engineering schools and colleges throughout the world that they have done so little in the 32 years of our existence in breaking ore and rock. However, recently there has just been one bit of little blue sky in this respect, as the official statement of the Aurora West United says: "By the extended use of machines of the Jack hammer type it was found possible to increase the ore crushed by 3,500 tons as compared with the previous quarter's operations." Now surely by the handling during the war of the most powerful known explosives we ought to discover some means of breaking the ore up more cheaply, thus making the Western and Central Rand payable. In fact, the Rand to the west of Johannesburg, also the Black Reef in the vicinity, have hardly been scratched. Here we have the cheapest labour in the "European world" and with three or four hefty white men with a batch of natives it is surprising what has been done when tributating the poorer mines, the Mint, Bonanza, and Spes Bona. In each of these cases the tributors made nice little fortunes. As regards Johannesburg itself, whilst it has no waterways or seaports, yet we have a wonderful water supply, with the great coal measures near by, so near that it is said we have some of the cheapest coal in the world at our very doors. Again, look at our geographical position on the main railway from Delagoa, Durban and other ports to Southern Rhodesia, also midway between two of the greatest diamond producers in the world, De Beers and the Premier. We have also great potentialities in not a few industries and manufactories. Suitable manufactories, content to supply the Rand

and the Transvaal generally with just the goods wanted, can well rest assured of success. We are also a great distributing centre, particularly for soft goods, boots, draperies, clothing and such like, where railway carriage is not of paramount importance in the matter of competition between Johannesburg and the coast. We have also a brand-new Act of Parliament giving us the diamond industry, and surely we have an excellent chance that several manufactories will assist in making up the deficiency caused by a few mines shutting down. Now take the Far Eastern Rand. To say the best, it is a very straggling place, and Springs may even become a Clapham Junction, but it will never overwhelm our London. The shopkeepers will naturally supply the various employees and families of the mines immediately around any particular mine with the necessary foodstuffs, but the real week-end shopping centre will always remain in Johannesburg, as this is the cheapest place in the Union for general shopping purposes, as well as for all kinds of machinery, for Transvaal iron, and stores of all kinds. As regards the management, the control can easily rest in Johannesburg, because we have the telephones to tell us momentarily what is happening at the mines or branch businesses, and then if an engineer or manager is wanted he can be anywhere in the mining area within about half-an-hour. As regards the inflated prices of property in Johannesburg, it may be so in years to come, but seeing that our present sovereign has only a purchasing power of 15s., or even less, as compared with pre-war days, house property can come down 25 per cent., similarly to what it has done in the past in Johannesburg; but that is the chance which one takes in a mining camp town. And surely with all the enterprise there is on the Rand, people will deserve to lose their money and their wits if they let Johannesburg go to the dogs, as predicted in the sceptical article. Remember a new reef has been found and spoken very highly of in the Heidelberg district. Now such an extension is one of the secrets why Johannesburg will hold the palm as a centre, because the various gold mines split the areas up into small villages and these keep as such. Therefore all these places must have a centre, and as Johannesburg is already in possession as that great centre it will take a lot of work and worry to replace it—not in this generation at all events.

TIMBER AND BUILDING MATERIAL.

The sawmills have been exceptionally busy since the strike was over, but they will take some time yet to catch up old orders. Much of this delivery is now being done by motor trollies, particularly for distances over ten miles. The radius for these trollies is anything up to twenty miles, which is placing things on a different basis, as motors are doing now what previously went per rail, with all the loading and unloading for short distances. The price of deals and roofing iron is firming up just a little, but nothing much. Deals are 1s. 5d. to 1s. 6½d., according to length; floorings

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9d., and ceilings 6d. per ft. Pitch pine is 10s. 6d. new, and good second-hand 5s. per cube. It may be stated that there are a lot of heavy timbers and logs about through the recent dismantling of several derelict batteries. These are realising good prices in their various stages of utility, although the firewood dealers have picked up quantities of the poorer qualities. Things are very lively in the second-hand material market, the tone being exceedingly good and business active on account of the demand as was expected on the cessation of the strike. Prices are good at 1s. per ft. for the best roofing iron, and deals 1s. 2d. New timber at these yards is 1s. 5d. and new iron 1s. 4d. per ft. All the activity, both in the new and second-hand yards, is for old orders—new ones lying low for the time being.

IRON, STEEL AND MACHINERY.

The Transvaal bar iron and steel trade is gradually increasing, chiefly on account of the recently decreased price at Dunswart for bar iron to 35s. and at Vereeniging at 37s. 6d. per 100 lbs. for mild steel. This iron and steel answers for all ordinary purposes for blacksmiths, engineering shops and mines, and being about 10s. cheaper per 100 lbs., the demand is great, as the imported iron is only wanted for the better class and most reliable strengthening work. However, we have a long way to go yet, as such things as baling wire, and other wires for that matter, cannot easily be made, also wire nails and such like. These may all come in time, but we may congratulate ourselves in having done so well. There is a big demand for black baling wire at 37s. for 14 gauge and 39s. per 100 lbs. for 16 gauge. Wire nails are 40s. for 5 in. and 6 in.; 45s. for threes and fours; 50s. two and two-and-a-half; 52s. 6d. one and half; and 60s. for one inch. Imported steel, 50s. per 100 lbs.; steel rods, 6d. lb.; steel plates, 45s. per 100 lbs. There has been a good enquiry for steam power, particularly portable engines for up-country. All the second-hand engineering yards are busily engaged in furbishing up all their engines to meet the present and prospective demands. An engineering plant was made in Johannesburg for the soda lake, and it is said that a very creditable job was turned out.

THE AMERICAN COTTON CROP.

One of the first American importers of mining material has favoured us with the following information about the American cotton crop, which, as cotton enters into the manufacture and regulates the price of hose, belts, etc., will be of real interest to our readers. His latest advice is that prices at the factories are declining very slowly, the only improvement is as regards deliveries, which are much quicker than they have been for several years past. The price of cotton goods is very steady, which is due to the curtailment of output by the American planters, who, it is understood, are reducing their output from a basis of approximately twelve to fifteen million bales to a 9,000,000 bale crop in 1919. The reason of this is that the cotton growers of the southern States of America claim that their product has been selling under cost of production for the past thirty years, and the tremendous demands for their product during the war period and the prices they have received for the same have convinced them of the necessity of organising for their own protection, which has accordingly been done throughout the entire cotton belt, the result being that the 1919 crop will be considerably reduced, as outlined above. The planters claim that on the 9,000,000 bale crop they will receive as much gross revenue as previously was the case for the 12,000,000 bale crop, and the resulting saving in the cost of producing the lesser quantity will show them a clear working margin of profit.

TREND OF BUSINESS.

A leading merchant in the mining material trade almost exclusively was rather despondent on Thursday, as he expected very little or no improvement this year, as the demand from the mines for essential and heavy goods is very poor indeed, because, as previously remarked in these notes, the mines are using very freely from their reserve stocks. However, the end of the builders' strike has put more life into business, as it stands to reason that old

orders have had to be delivered as quickly as possible, hence much activity in the timber and brick yards. The builders are hurrying matters forward as smartly as possible, and therefore they find there is a shortage of masons, bricklayers, plasterers and carpenters, many of whom went away during the early period of the strike. In addition to the improvement in the building material trade, there was altogether a better demand for linseed oil, as one firm has had more inquiries for that commodity during the week than at any other time during the past twelve months. Owing to the speculative element becoming less and less, values practically all round are inclined to become firmer, with a few exceptions, such as bar and imported iron generally, as the reductions of the local bar iron at Dunswart to 35s. and Vereeniging 37s. 6d. per 100 lbs. are beginning to make themselves felt, which is a good indicator for the future in respect of further reductions when our new pig-iron industry becomes more and more an accomplished fact.

ELECTRICAL TRADE.

Electrical materials have been coming forward from overseas in sufficient quantities for current and expected demands, and there does not appear to be a shortage in any important heavy lines. Prices have declined somewhat, doubtless because of lower importing costs. Orders and inquiries from the mines have been on a reduced scale, since little important surface construction work is being carried out. Resumption of electrical business on the pre-war scale cannot be looked for until the plans for the development of the Far Eastern district have matured. Electrical apparatus is for the most part auxiliary to mechanical equipment, and large business is not to be expected until the new mines are further advanced and the time has arrived to provide for crushing and treatment plants. Meanwhile, available stocks suffice for the most part to provide for the requirements of maintenance.

CEMENT GUN.

The cement gun is now being used on the Modder East, and the results are said to be very satisfactory. An expert in cement work is going out to the mine during this week, and we hope to give a reply to Mr. Hosking-Ivey next week.

Newdwarf Gold: Far East Rand Interests.

In a circular to the shareholders, the secretary of Newdwarf Gold, Ltd., states: The response of the shareholders to the directors' appeal of November 16 last was so satisfactory that the contemplated agreement referred to therein has been executed by all parties and confirmed by the vendor company in general meeting. The company still possesses its original mining claims in Rhodesia, recently let on tribute, but not now being worked. These claims it is proposed to vest in a new company in accordance with the scheme outlined in the directors' circular letter of November 16. The new interests acquired are situated on the south-eastern extension of the Far East Rand, and comprise the options granted more than two years ago upon exceptionally favourable terms and running until January, 1922, and June, 1921, respectively, to purchase the following:—(1) The mining rights of the greater part, about 700 morgen, of Klipstapel immediately adjoining Boschhoek (owned by the Heidelberg Estates and Exploration Co., Ltd.), and carrying the outcrop of the Van Ryn Reef and also the deep level of the Nigel Reef. The area is equivalent to about 1,000 claims, of which, including discoverers' claims, the company will be entitled to 250 claims. In addition, and under the Mining Leases Act of the South African Union, the company may acquire from the Government the mining rights over the remaining 750 claims on a profit-sharing basis, which it is estimated will give the company a total interest equivalent to 625 claims in a mine covering 1,000 claims. (2) The mining rights of 910 morgen (known as "Wolfhok") of the adjoining farm Elandsfontein, carrying the outcrop of the Nigel Reef. The area is equivalent to about 1,300 claims, of which, including discoverers' claims, the company will be entitled to 300 claims. In addition, and under the Mining Leases Act, the company may acquire from the Government the mining rights over the remaining 1,000 claims on a profit-sharing basis, which it is estimated will give the company a total interest equivalent to 800 claims in a mine covering 1,300 claims. According to the evidence available from the most recent reports and geological maps, the reef formation underlying Klipstapel is the direct extension of the reef being worked by the Sub Nigel mine, itself a continuation of the Van Ryn and Modder Companies' reef formation, from which the whole of the Far East Rand output of gold is realised. The reef formation underlying Wolfhok is in like manner the direct extension of the Nigel Reef, from which the Nigel Gold Mining Co. is stated to have realised over £3,000,000 of gold from 200 claims.

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Notes and News.

Union Corporation Profits and Dividend.

The accounts for the year ended 31st December, 1918, show a realised net profit of £145,380. The Directors have decided to place £20,000 to the credit of the reserve account and have declared a dividend of 12 per cent. (1s. 6d. per share), leaving the sum of £45,364 to be carried forward.

* * * *

State Aid for Tin Mining.

We note that the Camborne correspondent of a London contemporary has "reason to believe that the recommendation has been made by the Committee of the Imperial Mineral Resources Bureau that temporary assistance should be given to the Cornish tin mines pending a general investigation and inquiry by the Government."

* * * *

Vereeniging Estates.

Senator Samuel Marks had a most encouraging statement to make at the annual meeting of the Vereeniging Estates last Saturday. He reviewed the varied activities of the Company, and showed that progress was the keynote in every direction. A full report of the Chairman's speech will be found elsewhere in this issue, from which it will be seen that the future of Vereeniging and the industries that centre in it was never brighter.

* * * *

Defective Air in Disused Raises.

An interesting paper on defective air in disused raises and back stopes was read by Mr. C. J. Gray before the meeting of the Chemical, Metallurgical and Mining Society at the Johannesburg School of Mines last Saturday. Mr. Gray said that it was common knowledge that owing to possible accumulation of carbon dioxide gas precautions should be taken when entering disused winzes. It was, however, not generally realised that, apart from possible recurrence of firedamp, similar precaution was advisable in disused raises and similar places in Witwatersrand mines.

* * * *

Some Practical Hints for Small Workers.

The Rhodesia Resources Committee is issuing a number of pamphlets, written by experts, dealing with various subjects of interest to the farming and mining community. Among these is one by Mr. S. A. Pingstont, F.C.S., entitled "Practical Suggestions for Small-workers." This contains a series of notes on sampling and estimation of values, amalgamation, treatment of amalgam, water supply, etc., and should be in the hands of all who are interested in greater efficiency on their properties. We have no doubt that the secretary will be pleased to supply copies to anyone who applies to him at P.O. Box 4, Bulawayo.

* * * *

Modder East Debenture Issue.

Despite some show of opposition from a body purporting to represent some of the shareholders, the special meeting called to consider the Modder East debenture issue unanimously approved of the proposal. Mr. Max Honnet presided, and before moving the formal resolutions reviewed the position of the company in detail, particularly in relation to the work accomplished, the money spent, the prospects and the financial requirements, at the same time giving the latest information regarding the mine. Mr. Honnet summed up by saying: "The governing factor of the whole situation is the success or otherwise of development in the mine. I have shown you that though our prospects are by no means certain, they can be described as very favourable, and the point of vital importance now is to raise the necessary funds and get on with the work." The funds have now been voted, and recently development at the mine encourages the belief that the Modder East will turn out an important addition to the successful producers of the Far East Rand.

The Rand Mines Report.

The annual report for 1918 of Rand Mines, Ltd., will be found in another part of this issue. The report this year is of an unusually lengthy and informative character, and provides an extraordinary valuable review of operations on the mines administered by the company. The interests of Rand Mines, Ltd., go on expanding year by year; and it is a matter for congratulation that its annual report should give a lead in the detail and completeness of its information. An excellent coloured map of the Rand is attached to the report as distributed to shareholders. The annual meeting of the company will be held on June 27, when we may expect an important statement on the position of the industry in general from the Chairman, Sir Evelyn Wallers.

* * * *

A South African Explosives Merger.

It may be remembered that recently all the big British explosives makers united in a big merger with a combined capital of fourteen millions sterling. A notable absentee from the combine was, however, the De Beers works at Somerset West; but there is now reason to believe that the latter has consented to come in. The visiting representatives of the explosives combine, Messrs. Chamberlain, Armstrong and General Milman, have been busy on the scheme for some time, and it is significant that the two first-named gentlemen have already left for England, their mission doubtless satisfactorily accomplished. The war has brought about wonderful advances and economies in the manufacture of explosives, and it is to be hoped that the mining industry will reap the advantage in the shape of a better and cheaper article.

* * * *

Sharemarket Restrictions.

It is satisfactory to note that a recent issue of the *Times* in its city article had a strongly-worded article on the urgent necessity, in the interests of Imperial commerce, for the removal of the restrictions on sharemarket dealings between England and the Dominions. In the same issue a letter from a well-known business man, Mr. Acton-Davis, makes an eloquent appeal for early action on the part of the Imperial Treasury in the matter, and it is reasonable to hope that the effect of these representations will be as desired. Nothing further has been heard on this side, up to the time of going to press, regarding the fate of the request made to the Imperial Government, with the backing of the Union Government, but it is inconceivable that action will be much longer delayed.

* * * *

Rooiberg Milling Suspended.

The following are details of the operations of the Rooiberg Minerals Development Co. for the month of April:—Tons treated: Ore, 1,300; slime, 675; concentrates produced, 343; expenditure, including realisation charges and exploration, £5,539; revenue, £3,698. The board of directors has decided to close down the treatment plant for a few months and to continue a vigorous policy of development and exploration with a view to proving the existence of further pay ore. The ore won during this period will be stacked and treated at a later date. This policy will enable substantial economies to be effected and will provide a guide for the future programme. The company is risking a fall in the price of tin, but after due consideration the board of directors think this possibility is more than counter-balanced by the savings to be effected.

* * * *

A Northern Free State Flotation.

The prospectus of a new company styled the New Van Ryn Mines and Estates, Ltd., with a registered capital of £60,000 has recently made its appearance. The company has acquired certain options over a block comprising eighteen farms in the Vredefort district of the Orange Free State, consisting of nearly 6,000 morgen "throughout which," says the prospectus, "the Van-Ryn-Nigel series of Witwatersrand reefs has been traced, and, as the directors are advised undoubtedly and conclusively exposed." The directors are Dr. E. R. Snijman, M.D., Kroonstad; Senator T. A. White, Germiston; Percy Vigors-Tiran, Esq., Kroon-

stad; W. De Ruiter Canisius, Esq., Kroonstad; P. J. Faure, M.B.E., M.P.C., Bloemfontein. Of the registered capital of £60,000 "only 12,000 shares are to be allotted as fully paid to the vendor," 30,000 shares are offered for subscription at par, and the balance of 18,000 will be kept in reserve subject to the vendor's rights to subscribe 9,000 at par. The properties have been reported on by Mr. J. Gouldie and Mr. Scott Alexander, but in the prospectus the evidence given by Dr. E. T. Mellor to the Parliamentary Committee in 1916 regarding the East Rand occupies a prominent place. It is noteworthy that both Messrs. Gouldie and Scott Alexander place the horizon of the "Nigel-Van Ryn Reef" below that of the Main Reef Leader.

* * * *

Rand Share-Splitting.

Shareholders and dealers, and even investors, we gather, are far from unanimous in welcoming the proposals to split up the higher priced Far East Rand shares into shares of smaller denominations. It is argued by those who are opposed to the idea that shares of the lower priced varieties are far more liable to suffer from the vagaries of public fancy than the slower-moved high priced descriptions. The small man, as has been only too clearly shown in the past, is only too easily affected by every wind and rumour that blows and frightened out of his holdings at the slightest provocation. His advent, therefore, into the ranks of holders of the better class mining shares is not enthusiastically welcomed by conservative holders. There is, of course, a great deal to be said on the other side, and the question invites further discussion.

* * * *

Free Market for Gold.

In the Senate this week Senator Munnik asked whether the Government had seen an article in the London *Times* regarding a free market for South African gold, which would add £1,500,000 to the revenue from the Rand gold fields and what steps the Government intends to take to safeguard the interests of the industry and enable it to get full value for its products? The Minister replied that the attention of the Government had been drawn to the article. Inquiries had been instituted from which it was gathered that the figure quoted was exaggerated. The disposal of the produce of the mines was a matter for the industry to arrange. The Government was endeavouring to do everything it could to assist the industry. When a mint was established in South Africa the gold mining industry would derive benefit. In the meantime inquiries were being made. In this connection it is noteworthy that the *Times* of April 12 says: "The real reason why exports of gold have been prohibited is that gold is worth more than its equivalent in sterling credits. It is curious the embargo should have been imposed within a few months of the issue of the Incheape Inquiry Report, which denied that our currency had depreciated below its gold parity. The Incheape Committee therefore reported against the idea of a subsidy on gold production, because they said it would not be economic policy to pay more for gold than it was really worth. We agree, but the point was that the producers were not getting its full market worth, but something less. It is, perhaps, not generally known that the gold producers did not actually ask for any increase in price. They were approached with a proposition that they should sell their gold for a term of years payable in a depreciated currency. There was obviously no inducement for the producers to enter into any such contract, which would give them no more than they would in any case receive and prevent them from selling their gold at a possibly better price. The Government, through the Bank of England, must have made a very large profit on shipments of gold during the war. It was this profit which the producers were really deprived of, and which they would have continued to be deprived of if they had accepted the offer made to them. With the American exchange at \$4.60 to the £1, the value of the Transvaal gold output for a year is £2,000,000 more than the amount the producers would receive if the gold were sold at the mint price of 77s. 9d. per ounce. It is unlikely that the producers would agree to forego this profit."

TOPICS OF THE WEEK.

THE GOVERNMENT AND THE MINING INDUSTRY.

Long threatening comes at last; and the solemn warning conveyed to the Government by the President of the Chamber of Mines, and put on record elsewhere in this issue, regarding the imminent closing down of the poorer mines of the Rand is no surprise to those conversant with the trend of Rand industrial events in the past four years. Sir Evelyn Wallers sets out the now all-too-familiar facts in plain, unequivocal language, and thereby displays a patience with, and trust in, the innate good sense of the Government, which unfortunately most of us find it impossible at this hour to share. The Minister's reply, also placed on record in this issue, is extraordinarily disappointing, and fulfils quite the worst expectations. It treats the allegations of unjust and excessive imposts on the industry with guilty silence. To excuse would doubtless be so patently to accuse, that even the Minister, inured to the practice of shuffling off responsibility, thought it better to turn a deaf ear to the impeachment. Indeed it would have been well if he had pursued the same policy in regard to all the points raised in Sir Evelyn Wallers' letter. Where the Minister does attempt a defence, the result is so lame and ineffective that it is worse than none at all. In regard to recruiting native labour from above latitude 22 deg. South, he weakly takes refuge behind the opposition of a few ill-informed laymen in Parliament who set their muddle-headed prejudices against the views of the expert medical men who have made a life study of the question. Equally unconvincing is the Minister's reference to the fact that a Select Committee two years ago was unable to solve the question of the low-grade mines. In that two years the position has grown steadily worse and the need for action every day become more urgent. What was a mere dread possibility then has become to-day a distressing certainty. In the face of it, the palliatives suggested by the Minister simply invite ridicule. A Commission, something in the nature of a coroner's inquest, is to be held in regard to each defunct mine, and the solemn farce of enquiry into already-ascertained facts is to be thrown as a sop to the victims. In addition, the mines are asked to observe the maximum interval of time between the dates of their expiry, which is tantamount to sentencing a condemned man to protract as long as possible the painful process of his dissolution. In effect, it means that the industry has asked the Government for the bread of practical help and has been handed out, instead, a stone—or, rather, a tombstone! If, as some well-informed people seem to think, the attitude of the Government is based upon a calculated belief that it has sucked the mining industry dry for revenue purposes, and that the agriculture and other industries of the country can now be regarded as rendered self-supporting and independent of the aid of the mines, the Government is more stupid and short-sighted than even we had imagined. If our reading of the economic position of the country is correct the loss occasioned to every branch and channel of the public revenue by the defection of several important Rand mines cannot be met without imposing crushing burdens on agriculture and the younger industries. Apart from that, the question remains, is the large and important section of the community that lives directly and indirectly on the threatened mines going to take the blow lying down? For that best of reasons, self-preservation, we look to the public bodies of Johannesburg and the Reef to take action, at once prompt and determined, to protest against the attitude of the Government. The Reef Municipal Councils, the various

Chambers of Commerce, and indeed every public body endowed with a spark of public spirit must move, and move quickly, to bring the Government to its senses, and awaken it to the enormity of the injury to the best interests of the people of this centre occasioned by its indifference to the disaster now threatening. Once before, in the last few years, we made a similar appeal to our public bodies in similar circumstances, and the gratifying response to that appeal, we believe, did more than anything else to secure the appointment of the Parliamentary Select Committee to investigate the position of the low-grade mines. To-day the need is far more urgent and the danger far more imminent. Once again it is "up to" every public and influential body in town and on the Reef speedily to make its voice heard. Only in this way, it seems, can we now hope to rouse the Government, before it is too late, from its attitude of supine and fatal lethargy.

The Diamond Market.

The latest description of the Diamond Market in London is as follows: "The activity in the diamond trade, which is as great as ever, is making its influence felt upon stocks. Nothing like the conditions at present obtaining has ever been experienced, and it would seem that the decision of the producers to limit supplies in the manner that is now being done came at the psychological moment. In normal times the policy would have proved effective; the war and the redistribution of wealth resulting from it have therefore come with added force. The market, in fact, shows no signs of tiredness; the demand for rough is so great and so persistent that, if possible, even better conditions should be created. During the week under review the Diamond Syndicate marketed Bultfontein goods, and again had full sales at satisfactory prices. The brilliant trade has also shown further progress, and there is scarcely any stock available of either rough or polished diamonds. As regards industrial sorts the better tendency, to which reference has been made in previous reports, continues. The effects of the change over from war to peace avocations are now more noticeable. Engineering firms that needed tools for munitions, engines of various sorts, etc., are varying their requirements, and orders in gradually increasing quantity are being received by the leading houses in this particular, and specialised, branch of the diamond trade."

* * * *

South African Diamond Corporation.

It will be remembered that at the annual general meeting of the South African Diamond Corporation in October last, Mr. Bernard Oppenheimer outlined certain arrangements which it was proposed to enter into with a view to getting rid of some of the rights attaching to the Permanent Directors' shares and making them rank "pari passu" with the ordinary shares of the Company. These arrangements were submitted to meetings of holders of both classes of shares, called by order of the Court, recently in London, and unanimously agreed to. Under the old scheme the two permanent directors held one share each of £1,000, which entitled them to have divided between them in equal shares 25 per cent. of the profits of the Company in each year after the allocation to reserve of such a sum thereout as the directors should determine, and in the event of a winding up, 25 per cent. of the surplus assets after paying off the whole of the paid-up capital, including the capital paid up on the permanent directors' shares. The permanent directors propose to forego these rights, and in exchange to have the right, for five years, to call upon the Company to allot them 50,000 ordinary shares of the Company of £1 each, the first 25,000 at 25s. per share, and the remaining 25,000 at 30s. per share. The arrangement is a very favourable one to the Company, and the permanent directors, Mr. Isaac Lewis and Mr. Bernard Oppenheimer, are to be highly commended for their action.

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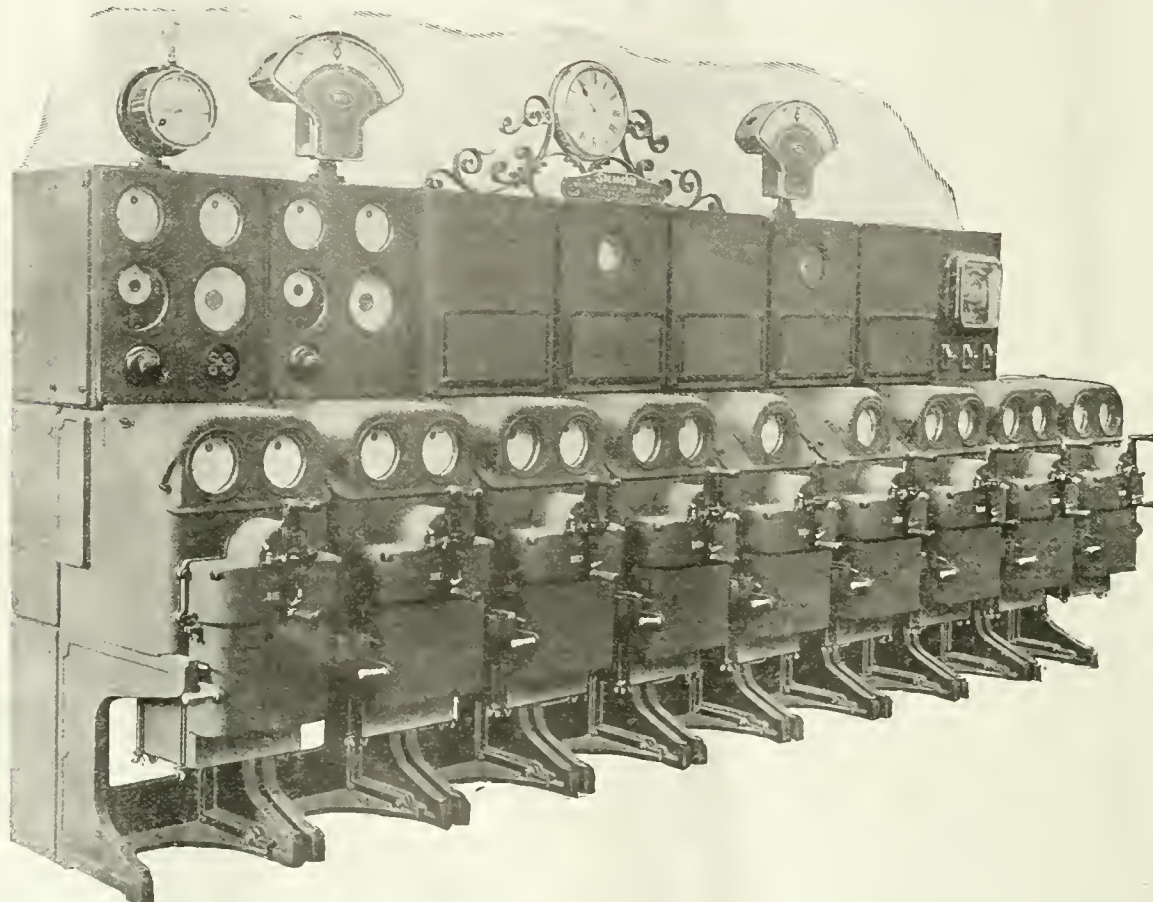
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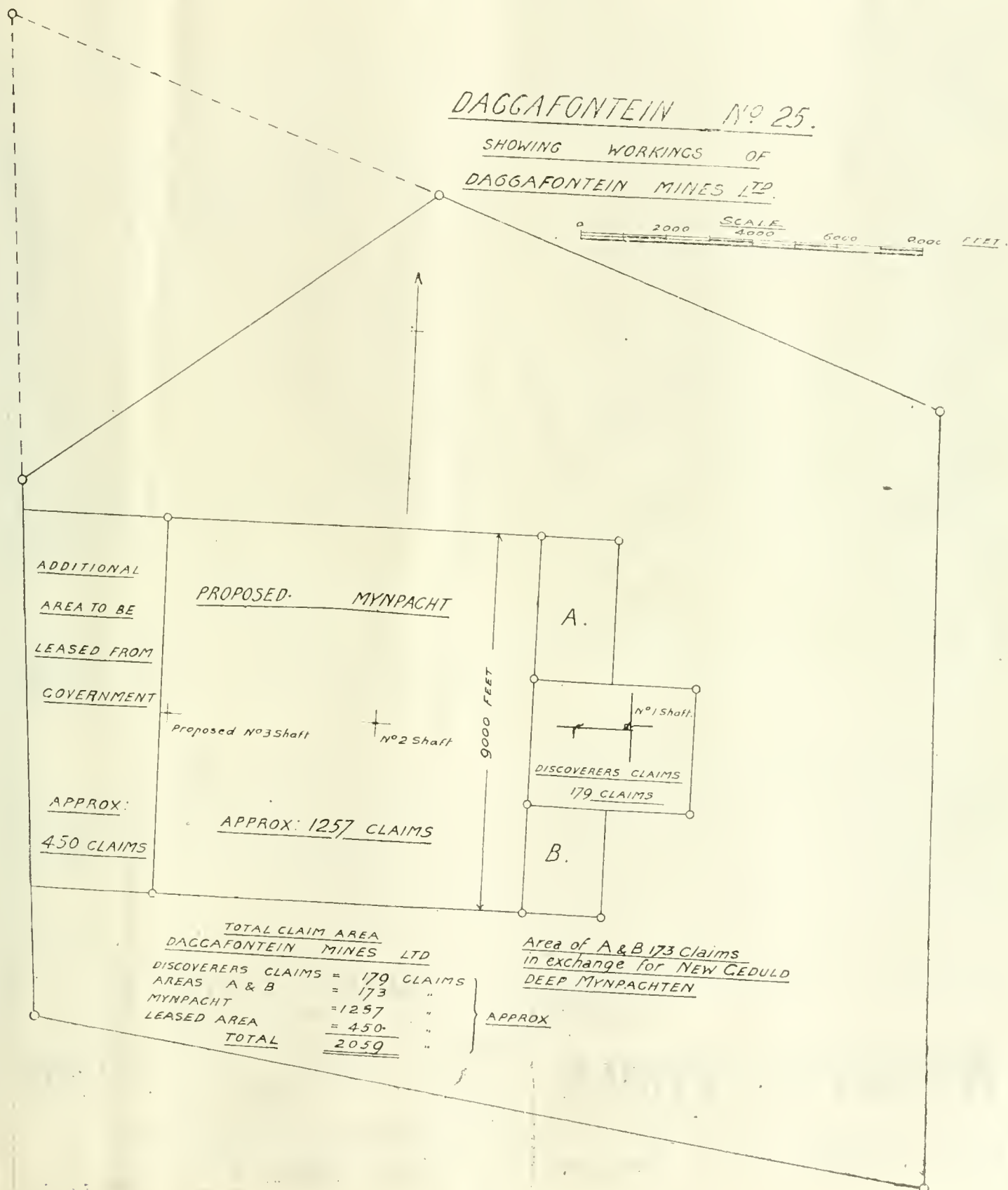
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THE DAGGAFONTEIN NEW AREAS.

Shareholders and Government's Percentage of Profits—Contemplated Sinking of a New Shaft to Exploit Western Claims—Large Expenditure on Plant and Buildings Authorised—A New Chapter in the Coy.'s Hitherto Unlucky History—The South Eastern Corner of the Legitimate Far East Rand.

In our last issue we referred briefly to the large extension of the Daggafontein Mines claim holding, and in view of the present size of this proposition and the important part which

the mine will play in the future history of the Far East Rand further consideration of this company and its prospects is called for.



HISTORY IN BRIEF.

The existing company—Daggafontein Mines, Ltd.—is a reconstruction of the Daggafontein G.M. Co., registered in October, 1902, and the fourth report and accounts of the company for the year ended December 31, 1918, discloses the registered capital to be £730,000 in £1 shares, of which 30,325 are in reserve. The technical and administrative control of this property is vested in the Consolidated Mines Selection Company and the board of directors comprises representatives of that corporation, the Central Mining-Rand Mines group, and Henderson's Consolidated. The present company was registered on March 28, 1916. Active operations were suspended by the former company in December, 1911, but on the provision of further working capital work was resumed in June, 1916, and to December 31, 1917, the amount of development work carried out from No. 1 shaft had been 5,035 feet, of which 3,280 feet had been sampled showing a value of 22·2 dwts. over 13·6 inches.

PAST MISFORTUNES AND PRESENT ACTIVITY.

Daggafontein has so far proved itself to be one of the most unfortunate properties on the Witwatersrand. Owing to the workings being inaccessible during the greater portion of the year on account of water, no development work was done during 1918. The water difficulties were, however, overcome some time ago and development work was resumed early in February, 1919. The pumping plant at the 2,000 ft. station at No. 1 shaft was completed early in April, 1918. Work was then concentrated on dewatering the lower portion of the shaft and recovering the Main Station. At the end of the year the bottom pump station was completed, and pumping was started on the 2nd January of this year. A dam is being built in the 2nd level drive south with a view to applying cementation to seal off the water encountered in this heading. At No. 2 shaft the 500 ft. pump station was completed early in 1918. The dolomite water below this level was successfully sealed off by cementation. As the application of the process involved a considerable time, the footage sunk for the year was only 509 feet. Good sinking progress has lately been attained and now that the company has a greatly increased claim area, has ample financial backing, and is engaging on a forward policy of development and equipment, it seems reasonable to expect that a more fortunate era is in store for the company.

THE NEW AREAS.

As stated in our last issue, the claim area of Daggafontein Mines is now approximately as follows: Mynpacht area, say 1,257 gold claims; discoverer's claims, 179 claims; exchange for New Geduld Deep Mynpachten, 173 claims; leased from Government, 450 claims; total, 2,059 claims. Daggafontein thus becomes one of the largest propositions on the Witwatersrand. Under the new scheme of things for the Daggafontein Mines, Ltd., the area leased from the Government will be in extent 450 out of a total of 2,059 claims, or 21·885 per cent., and the profits will be taxable in this ratio.

THE TAXATION ASPECT.

Under Section 2, Sub-Section 6, of the mining legislation relating to leased mineral areas, the percentage of total profit payable to the Government is as follows:

Profits Expressed as a Percentage of Revenue.	Percentage of Profits Payable to Government.
10	Nil.
12	·57
15	1·4
20	2·82
25	4·22
30	5·62
35	7·04
40	8·20
45	9·11
50	9·83
55	10·42
60	10·93

A FORWARD POLICY.

In this issue will be found a plan showing the present claim constitution of the Daggafontein property. It may be observed that the eastern boundary of Spring Mines now adjoins the western borders of Daggafontein and also that the sinking of a new shaft to be known as No. 3 to exploit the western portion of the mine is under consideration. Good progress is being made in the sinking of the No. 2 shaft, which was deepened by 192 feet during April, and also in the sinking of the incline from the No. 1 shaft to No. 2. Approximately one-third of the intervening distance has now been covered. The company intends embarking on an ambitious policy of development and equipment. Adequate pumping plant is to be installed, and as Daggafontein is a somewhat remote property due regard will be had to the housing and amusement of employees. We understand that the company has in contemplation the expenditure of approximately £150,000 on these accounts in the immediate future. Daggafontein appears to have entered on a new epoch in its hitherto unlucky existence, and having regard to the large size of the venture right on the extreme south-eastern corner of the "legitimate" Far East Rand, its future development will be watched with the very keenest interest.

Zaaiplaats Tin.

The Zaaiplaats results for the month of April, 1919, are as follows: Days run, 25 days; concentrates won, 53 tons; estimated profit for the month, excluding Government taxes and directors' Fees, £1,914 9s. 4d.; capital expenditure, £298 17s. 9d.

The Lonely Mine.

The following are particulars of output of gold, etc., from the Lonely Mine for the month of April, 1919: Mill ran 694 hours; crushed 4,640 tons; fine gold recovered, 1,990·776 ozs.; value, £8,369 14s. 1d.; slimes treated, 4,640 tons; fine gold recovered, 3,820·368 ozs.; value, £16,064 13s. 3d.; total fine gold, 5,811·144 ozs.; total value, £24,434 7s. 4d.; profit, £13,395 13s. 9d.

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WILL JOHANNESBURG LAST?—III.

The Sceptic Returns to his Pessimism—Will South Africa Last? the Real Question—The Government's Indifference to the Rand—What Closure of the Low Grade Mines Would Mean to the Country—Constructive Policies Urgently Needed—Our Coal Resources—Will Johannesburg Become Another Zimbabwe?—Wanted a Strong Business Man—Government by a Syndicate of Rip Van Winkels.

[By a Correspondent.]

IN view of the correspondence appearing in your last issue on the subject of "Will Johannesburg Last?" your own editorial on the matter, and the momentous letter addressed on May 9th by the President of the Chamber of Mines to the Acting Prime Minister which forecasts the early cessation of work at a number of large Witwatersrand mines, I crave leave for space in your valuable journal further briefly to ventilate my opinions on the matter in view of its enormous importance not only to Johannesburg but to this country in general. In reality the question is a much bigger one than "Will Johannesburg Last?" It is to my mind a question of "Will South Africa Last?" with a Government that is content to twiddle its thumbs beneath the shadow of Table Mountain and indulge in futile debates about diamond contracts and the loyalty of students (who ought never to have been allowed to enter the country), whilst the goose that lays our golden eggs is slowly dying from the wrong kind of legislative diet. Never since Nero fiddled whilst Rome burned has there been such criminal indifference. As you rightly say in your last week's leading article, the prosperity of the whole country depends on the gold mining industry of the Witwatersrand. If our legislators do not realise this they are not fit to represent in power the people of South Africa. One can only imagine that they do realise it, but that because of their absolute lack of anything approaching statesmanship and their intellectual impotence, or else because they have other stupid reasons of their own for giving the matter no attention, the condition of the premier industry and town of the country gives the Government much less concern than the bilingual aspect of our railway time tables or the length of the session. The absolute indifference of the Government to the condition of the Rand gold mining industry is well displayed in the correspondence published in the daily papers under the heading of "Crisis Now at Hand" and "The Industry Imperilled." Sir Evelyn Wallers, in his solemn note of warning to Mr. Malan, wrote at the end of his communication: "It is proposed to publish this letter, but this will not be done until you have an opportunity of replying." Apparently Mr. Malan and his colleagues were too occupied with more momentous matters to give consideration to the fact that 16 large and important mines employing nearly six thousand whites and expending 25 million pounds per annum are in danger of being closed down almost immediately. Where, how and when are the Government going to find employment for six thousand men suddenly thrown out of work, and how do our legislators propose to make good the loss of twenty-five millions a year in spending power? Already the towns are full of unemployed soldiers who, having won the war for us, naturally expect that we shall offer them at least a livelihood, and thousands more men will be returning in the near future to the land that sent them out to do or die, and which made solemn promises to those spared to return. Where and how, I say, are we going to find work for these men, and how is the colossal loss of revenue which the shutting down of 16 mines will entail going to be made up?

Your correspondent who writes that he "has faith in Johannesburg" has not to my mind made out anything of a convincing case that Johannesburg will last after the mines in its immediate vicinity cease working. And he wants one to take a lot on trust in his vague references to subsidiary industries. I repeat, where and what are these

industries, how many people do they employ, and what amount of spending power do they represent? Your other correspondent, Mr. J. E. Miller, of the West Rand, is equally unconvincing. He writes about the Vaal River water works, for instance. No doubt it is a stupendous scheme, but can Johannesburg live on water? It is written that man shall not live on bread alone, but this is the first time that I have heard it suggested that this great town of Johannesburg can live on water! There must be real live and large industries to support the population, and if the Central Rand mines close down there is nothing in South Africa to take their place. No, Mr. Editor, neither Mr. Miller nor "One Who Has Faith in Johannesburg" have succeeded in altering my opinion that unless things take a material change for the better Johannesburg in thirty years' time will be a modern Zimbabwe, to which tourists will resort in order to view the ruins, and that the great Corner House will be sparsely tenanted by a few surviving inhabitants who want big flats at cheap prices. Fancy the Corner House with green boxes full of flowering geraniums on its window ledges! But the prospect is not an impossible one, unless our industrial grievances are remedied. I am certain that a big town is going to spring up on the Far East Rand, but that will not be sufficient to save Johannesburg or South Africa. If we are to avert a catastrophe in this country, the Government must do something to save the low-grade mines from extinction. As Sir Evelyn Wallers points out, and as your paper points out, the controllers of the mines have done all in their power by suggestion and a dogged pegging away at misfortune in the hope of better things to remedy matters. The Government, however, have scorned all constructive proposals. They seem to regard Johannesburg as a pestilence and Ministers never come near the place unless there is an industrial earthquake which prejudices their poor reputations and globular salaries. The Government must do something to solve this problem, or else give way to men who have the gumption to realise that the position is critical and who possess the pluck and ability to take measures to avert calamity.

And in this connection I find philosophy in the views of Mr. Miller and "One Who Believes in Johannesburg," particularly in regard to Mr. Miller. What he says about the drones on the mines and the advisability of removing the colour bar is absolutely correct. Here is one means of salvation, and for the life of me I cannot see why we who possess almost a monopoly in the production of gold cannot raise the price of our product if no other external assistance is forthcoming for the low-grade mines. I observe, too, that "One Who Believes in Johannesburg" writes: "We do not live on the profits which the mines make but on the working costs which these mines distribute." The President of the Chamber of Mines also makes this point when he writes: "Although the Far East Rand mines are the mines responsible for the bulk of the profits, the remainder of the mines provide the bulk of the expenditure." The Government must by some means see to it that these mines which provide the bulk of the expenditure continue operations, and they can only do this if the powers that be instead of mulcting these properties in every form of taxation imaginable give them encouragement and assistance so that they may work at a profit. After the publication of Sir Evelyn Wallers' letter in the Press the Government vouchsafed a reply to that momentous document. The only satisfactory

lecture of the reply is that our rulers have under consideration the advisability of establishing a mint somewhere on the Witwatersrand. I observe, too, that it is proposed to appoint a Commission to enquire into the working of the low-grade mines. Legislation by means of "Commissie" appears to be our universal panacea for all evils in this country. The keynote of the whole "Commissie" business is procrastination. The Commission cannot alter the value of the ore in the mines. And the remedies are so obvious that one is amazed at the utter futility of the suggestion of having a Commission at all. But this is typical of the methods of our uncanny legislators. No doubt in five years' time the Government will be considering the advisability of ascertaining whether the Argentine consumes coal and whether there would be any chance of the enormous coal fields of the Union capturing a portion of the South American Republic's coal imports which a good many people who are not tied by hide-bound red tape and prejudice and backveld somnolence know is worth about £48,000,000 per annum. Here is another means by which South Africa might be saved, as you, Sir, have frequently pointed out in the columns of your journal. Instead of doling out indiscriminate charity to poor whites, why doesn't the Government give these poor whites useful work to do? Why not double track the railway line to Capetown and to Luderitz-

bucht in anticipation of developing a large coal trade with South America? But no. I suppose the proposition is too logically self-evident to appeal to the Wotenagamot of futilities which unfortunately for this country is entrusted with its governance and which can only think in terms of drift, talk in terms of the things that don't really matter, and act in a manner which will only precipitate ruin. Is there not one in that council of wise men who has sufficient foresight to see where this policy of drift is going to land us; one man who has the common sense and the strength of will to agitate for business methods and to continue agitation until something is done? Relieve our low-grade gold mines from grievous taxation, double track our railways, exploit our coal resources, revise our inequitable gold law, unlock the land—these are means whereby we could drive unemployment from our midst and open up a fresh vista of prosperity. I repeat it is not so much a question of whether Johannesburg will last, but whether South Africa will last if we continue to be governed by a syndicate of Rip Van Winkels. This country can have unbounding prosperity if only the people who rule it will force its development, and if that development is not undertaken and the gold mines are allowed to wane into bankruptcy, well then, not only do I foresee grass growing in Johannesburg streets but a dark cloud of poverty descending like an avalanche over the whole country.

Latest Company Registrations.

The Breyten Apple Orchards, Ltd., 7 Standard Bank Chambers, Commissioner Street, Johannesburg; capital £6,000.
 Candava & Sonvadi, Ltd., Turkey Street, Sophiatown, Johannesburg; capital £500.
 Star Vinegar Works, Ltd., 186 Bree Street, Johannesburg; capital £100.
 Innesdale Trading Company, Ltd., 73 Main Street, Mayville, Pretoria; capital £100.
 C. L. Boyd, Ltd., corner Harrow Road and Saunders Streets, Yeoville, Johannesburg; capital £1,000.
 Yum Whyte, Ltd., 330 Main Road, Fordsburg, Johannesburg; capital £1,000.
 S.A. Mangera, Ltd., 4 Minnaar Street, Newtown, Johannesburg; capital £750.
 African Investments and Guarantee, Ltd., 25—29 Exploration Building, Fox Street, Johannesburg; capital £2,000.
 Argall Buildings, Ltd., 15 Green's Buildings, Commissioner Street, Johannesburg; capital £5,000.
 Adelaide Timber Company, Ltd., 15 Green's Buildings, Commissioner Street, Johannesburg; capital £2,000.
 Goldberg Brothers, Ltd., 135 Main Road, Fordsburg, Johannesburg; capital £48,720.
 Milton Distributors (S.A.), Ltd., 31 Cullinan Buildings, Simmonds Street, Johannesburg; capital £6,000.
 Selenky, Ltd., 183 Market Street, Johannesburg; capital £1,200.

FOREIGN COMPANY

The South African Nitrate and Potash Corporation, Ltd., care J. S. Richardson, 151 Stock Exchange Buildings, Fox Street, Johannesburg; capital £160,000.

ALTERATIONS AND ADDITIONS TO FOREIGN COMPANY.

Makganyene Diamond Syndicate, Ltd., Johannesburg.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

Dutton & Seymour, Ltd., Johannesburg; increase of capital and transfer of shares.
 The South African Grain Trade Association, Johannesburg; alteration of articles of association.

Friedman & Foy, Ltd., Johannesburg; alteration of articles of association.

Fencing Poles and Firewood Supply Company, Ltd., Johannesburg; alteration of articles of association.

Standard Brass Foundry, Ltd., Benoni; directors.

Duffus Brothers, Ltd., Johannesburg; new articles.

Hoekberg Tins, Ltd., Pretoria; appointment of liquidators.

Machvie Deep, Ltd., Johannesburg; change of name.

NOTICES OF INCREASE AND DECREASE OF CAPITAL.

Dutton & Seymour, Ltd., Johannesburg; increased from £2,000 to £5,000.

I. Dockrat, Ltd., Pretoria; increased from £500 to £2,000.

Nerwood Land and Investment Company, Ltd., Johannesburg; increased from £10,000 to £20,000.

Witwatersrand Township Estate and Finance Corporation, Ltd.; increased from £200,000 to £600,373.

Bates, Mason & Company, Ltd., Johannesburg; increased from £4,000 to £8,000.

Duffus Brothers, Ltd., Johannesburg; increased from £100 to £500.

Spaarwater Gold Mines, Ltd., Johannesburg; increased from £300,000 to £500,000.

The Polar Star Company, Ltd., Piet Retief; increased from £6,500 to £14,000.

East Rand Engineering Company, Ltd., Germiston; increased from £10,000 to £20,000.

L. Fatti & Company, Ltd., Johannesburg; increased from £16,000 to £40,000.

Union Mica and Corundum Mines, Ltd., Johannesburg; increased from £3,000 to £6,000.

Union Mica and Corundum Mines, Ltd., Johannesburg; increased from £6,000 to £10,000.

Boksburg Brick and Fireclay Company, Ltd., Johannesburg; increased from £2,210 to £4,000.

NOTICE OF CHANGE OF NAME.

Witwatersrand Township Estate and Finance Corporation, Ltd., to South African Townships Mining and Finance Corporation, Ltd.

COMPANIES IN LIQUIDATION.

Pretoria Townships, Ltd., Johannesburg; capital £500,000.

Romola Nigel Gold Mining Company, Ltd., Johannesburg; capital £50,000.

Donovan Syndicate, Ltd., Johannesburg; capital £35,000.

Johannesburg and Suburban Building Syndicate, Ltd., Johannesburg; capital £4,500.

W. J. Morris, Ltd., Pretoria; capital £5,000.

S. J. Myers & Company, Ltd., Pretoria; capital £1,600.

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PROFIT SHARING ON THE MINES.

Some Interesting Correspondence.

IN connection with the article appearing in our last issue under the heading of "A Solution of our Labour Problems," in which some form of profit sharing in our mines was advocated, we have received a call from Mr. Henry Adler, who claims that his was the original suggestion that the mine workers of the Rand should invest their savings with the corporations or in the mines which gave them employment. In support of this claim Mr. Adler has handed us some interesting correspondence between Mr. Ffennell (then Mr. Schumacher) and himself, dating from six years ago. Mr. Adler's letter to Mr. Ffennell is dated December 31, 1912, and reads as follows:

"The pleasant chat I had with you in the train last week and the interest you showed in my suggestion for the establishment of a savings bank, encourages me to bring a few more points in support of my scheme under your notice in hope they may lead to your definitely deciding on adopting the scheme. Although not directly engaged in the administration work of any of the leading mining groups on the Rand, I claim a fair knowledge of its methods by reason of my unbroken residence in Johannesburg from its earliest period, and continuous study of all the details of the mining industry and its progressive development. From time to time I entered into the controversies over the question of labour for the mines, which forms undoubtedly the principal pivot on which the successful, or reverse, working of the industry depends. My views were invariably in conflict with those of the leaders of the industry, who restricted theirs to the one absorbing object, the obtaining of the extreme maximum of profit within the shortest possible period from a mine, not so much for the benefit of the multitude of investors as for the purpose of Stock Exchange manipulation, likewise regardless of the legitimate interest of the people, the commonwealth of the country, the real owners of the treasures which they, the lessees, abstracted. Looking back, we are bound to admit that the vast wealth taken from this country, and which is still being taken, has failed to establish a permanent settlement of the vast number of men engaged in which must be accepted to be one of the foremost industries of the world, an industry which to a very large extent influences the medium of commerce and finance of England, has for years and continues to furnish the standard material for the expansion of trade. Looking over the pages of history of other countries that produced exceptional mineral wealth, we find the development of it formed the nucleus of a nation, whereas here in this country the majority of the people it attracts are the birds of passage type, the only probable permanent settlers are General Hertzog's "fortuinzoekers." One naturally asks the reason for it and seeks for an explanation. To me it was never a cause for wonder; on the contrary, I contended all along that the uncertainty of their position on the mines made it impossible for men to prepare for a permanent home. The constant changes of management, followed by sweeping changes of working personnel, regardless of individual merit, was the great unfortunate bar against men taking that keen natural pride in their work, against the establishment of thrift, against creating homes for families and future generations. No man, be he professional or ordinary worker, was sure beyond his monthly engagement. Such suicidal policy as guided the controllers of the mines in their continuous changes could have no other effect than fostering the spirit of restlessness, which is apt to make men callous of the future and drives them to seek distraction from the thoughts of undeserved, ever-threatening discharge. Hence the development of the degrading spirit of gambling and other vices stamps the whole population of the country with the mark of restless adventurers. Labour, never certain of the true recognition of its legitimate value, demanded excessive pay when called for. Men who were willing, nay eager, to work in return for reason-

able wages coupled with guarantee of permanent work enabling them to enjoy the benefit of a modest home life surrounded by their families, with the prospect of letting their sons fill their places after they had done their duty towards rearing them to manhood, looked in vain for such a guarantee for such prospect. High wages led to excessive wages earned by men accustomed to living wages and were squandered or sent abroad to maintain their families or provide means for leaving the country after undeserved discharge. *There was no attempt made by mine owners to teach their employees the real art of living.* You are the first man of those who had and have the power to do so, who comes forward with an open policy that points in such direction. You told me of a change of policy in respect to tenure of office, of employment of men engaged on your group of mines, who shall no longer be at the mercy of a new manager, to be pushed aside for his friend. This is the first beneficial step towards inducement for men to feel to enjoy the comfort of looking for just reward of their work. Your scheme to provide houses with the right and prospect of securing proprietorship is a further great factor in securing these men as permanent workers, an inducement to them to establish a home. That desire once created is bound to be followed by resolve to save their earnings to provide for future wants for old age. Nothing is more easy than to lead men on to the road of thrift, provided the leader establishes confidence and trust amongst them. By opening a savings bank your corporation will encourage your employees to leave their surplus earnings in a reserve fund, more particularly if they receive a moderate rate of interest

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to be added to their capital. It will keep the men away from the race course, from gambling dens and liquor shops, and, what is of equal benefit to the country at large, make them permanent settlers. Sooner or later your house is sure to concentrate the working of the whole mining industry under its powerful administration. The enormous magnitude of its creative power opens an almost endless field for extending benefits to the corporation as well as its employees. Co-operation is sure to follow the establishment of a savings bank. In due course of time your depositors will become participators in the profits by investing their savings in the industry you control. Instead of looking for capital for extended operation abroad, you will have it at your disposal from eager investors in your own employ. You will be able to combine insurance with your savings bank, another mutual source of benefit to both employers and employees. It will help towards the establishment of that great ideal principle of co-operation under which alone all classes will work in harmony for mutual benefits and blessings. When you establish your township on the City Deep put a sound, able, sympathetic man in charge of the business management to educate the men engaged on the mine on the principle of thrift. Begin there with the work of the savings bank; a capable man should have no difficulty in turning the men's minds in the right direction to convert them. When they find the little township offering them moderate self-respecting sources of recreation after their day's labour, it will not take long to spread its benefits along the line of the reef, and you have every prospect of combining your ideal for the betterment in the conditions of the men you employ, with beneficial effects for the country and yourself. You will erect yourself a monument that will live for generations to come, leaving your name in the mind of mankind coupled with honour and respect. I trust you will accept what I have said in a kindly spirit. I have merely given you the thoughts that have been in

my mind for years, looking for a sympathetic worker who holds the position enabling him to call them to life. The chat I had with you gave me the impression that you have the strength of will, the great personality which it required to put my idea into action; and it is after all the privilege between men who can respect each other to exchange ideas, be they practical or idealistic, that are devoid of self-interest.

Mr. Ffennell's reply is as under:—

4th January, 1913.

Henry Adler, Esq.,

Farm Modderfontein,

P.O. Balfour, Transvaal.

Dear Mr. Adler,

I must thank you very much for your extremely interesting letter of the 31st December. We are now carefully considering the question of creating facilities for our mine employees to deposit their money. The point is that there must be not only facilities but also some little inducement, anyway at the commencement, and the details of the scheme require careful consideration. I was interested to find immediately after my talk with you that the directors of the East Rand Proprietary Mines had also just been considering the very same subject. I shall have pleasure in letting you know later on when we are in a position to make a start. I quite agree with you that this will be a step in the right direction—one of several steps which, with you, I hope will be taken in the comparatively near future. I shall always be pleased to hear from you if there are any points to which you would like to call my attention. Please give my kind regards to Mrs. Adler and yourself, and with best wishes for the coming year, believe me,

Yours sincerely,

R. W. SCHUMACHER.

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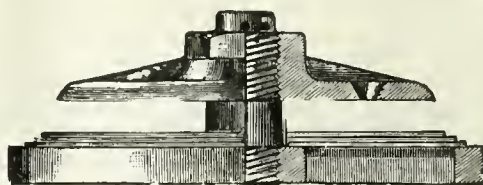
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RAND MINES' SHARE TRANSACTIONS IN 1918.

Some Interesting Figures—Securities Bought and Sold.

In the following tables are exhibited the shareholdings of Rand Mines, Ltd., according to the balance sheets 31st December, 1918, and 31st December, 1917:

1918.

Shares, at or below market value—

70,244	Bantjes Consolidated Mines, Ltd.
14,900	Brakpan Mines, Ltd.
197,587	City Deep, Ltd.
4,751	Consolidated M.R. Mines and Estate, Ltd.
865,112	Crown Mines, Ltd.
19,260	Daggafontein Mines, Ltd.
127,017	Durban Roodepoort Deep, Ltd.
40,847	East Rand Proprietary Mines, Ltd.
385,218	Ferreira Deep, Ltd.
6,375	Geduld Proprietary Mines, Ltd.
1,275	Geduld Proprietary Mines, Ltd., Options.
282,493	Geldenhuis Deep, Ltd.
114,300	General Estates, Ltd.
119,073	Jupiter Gold Mining Company, Ltd.
54,698	Modderfontein B. Gold Mines, Ltd.
8,500	Modderfontein Deep Levels, Ltd.
33,100	Modderfontein East, Ltd.
15,989	Modderfontein East, Ltd. (3 year Options).
15,586	Modderfontein East, Ltd. (4 year Options).
25,015	New Modderfontein G.M. Co., Ltd.
388,592	Nourse Mines, Ltd.
4,216	Pretoria Portland Cement Co., Ltd.
98,204	Robinson Deep, Ltd., "B" Shares.
29,275	Robinson Gold Mining Company, Ltd.
269,224	Rose Deep, Ltd.
7,205	Springs Mines, Ltd.
45,347	The Village Main Reef G.M. Co., Ltd.
19,520	Turffontein Estate, Ltd.
114,840	Village Deep, Ltd.
16,881	West Springs, Ltd., fully paid.
112,500	West Springs, Ltd., 2s. per share paid.
5,450	Witbank Colliery, Ltd.
14,120	Wolhuter Gold Mines, Ltd.

Sundry shares, value £125,815 10 0

Carried forward 3,066,401 0 7

1917.

Shares, at or below market value—

70,244	Bantjes Consolidated Mines, Ltd.
7,600	Brakpan Mines, Ltd.
197,087	City Deep, Ltd.
867,012	Crown Mines, Ltd.
16,660	Daggafontein Mines, Ltd.
127,017	Durban Roodepoort Deep, Ltd.
47,498	East Rand Proprietary Mines, Ltd.
393,568	Ferreira Deep, Ltd.
12,900	Geduld Proprietary Mines, Ltd.
282,493	Geldenhuis Deep, Ltd.
114,300	General Estates, Ltd.
119,073	Jupiter Gold Mining Company, Ltd.
23,682	Main Reef West, Ltd.
54,948	Modderfontein B. Gold Mines, Ltd.
10,000	Modderfontein Deep Levels, Ltd.
42,550	Modderfontein East, Ltd. (with full option rights thereon).
25,065	New Modderfontein G.M. Co., Ltd.
388,592	Nourse Mines, Ltd.
5,383	Pretoria Portland Cement, Ltd.
98,204	Robinson Deep, Ltd., "B" Shares.
29,275	Robinson Gold Mining Company, Ltd.
269,224	Rose Deep, Ltd.
5,550	Springs Mines, Ltd.

45,347	The Village Main Reef G.M. Co., Ltd.
19,520	Turffontein Estate, Ltd.
117,340	Village Deep, Ltd.
5,450	Witbank Colliery, Ltd.
24,120	Wolhuter Gold Mines, Ltd.

Sundry shares, value £89,296 16 8

Carried forward 3,142,418 9 4

It will be observed from these figures that holdings were increased and decreased during last year as follows:

HOLDINGS INCREASED.

Brakpan Mines	7,300
City Deep	500
Consolidated Main Reef	4,751
Daggafontein	2,600
Geduld Proprietary	6,525
Geduld Options	1,275
Modder East Options	31,575
Springs Mines	1,655
West Springs (fully paid)	16,881
West Springs (2s. per share paid)	112,500
Sundry shares increase in value	£36,518 13 4

HOLDINGS DECREASED.

Crown Mines	1,000
E.R.P.M.	6,651
Ferreira Deep	8,350
Main Reef West	23,682
Modder B.	250
Modder East	9,400
New Modder	50
Pretoria Cement	1,167
Village Deep	2,500
Wolhuter Gold Mines	10,600

Modderfontein East, Ltd.

(INCORPORATED IN THE TRANSVAAL.)

NOTICE TO SHAREHOLDERS.

Issue of £200,000 Debentures bearing interest at the rate of 6½ per cent. per annum.

NOTICE IS HEREBY GIVEN that at an Extraordinary Meeting of Shareholders held on the 15th May, 1919, resolutions were passed authorising the immediate issue of £200,000 First Mortgage Debentures bearing interest at the rate of 6½ per cent. per annum.

The resolutions and details of the issue are contained in a Circular to Shareholders, dated 15th May, 1919, copies of which can be had on application to the Transfer Office of the Company, 4th Floor, The Corner House (P.O. Box 2058), Johannesburg.

The Transfer Books of this Company will be closed from the 1st to the 3rd day of June, 1919, both days inclusive.

Application forms in connection with this issue will be posted to Shareholders as soon as possible after the 31st May, 1919, or may be obtained at the Transfer Offices of this Company, 4th Floor, The Corner House (P.O. Box 2058), Johannesburg.

By Order of the Board,

RAND MINES, LIMITED,

Secretaries.

S. C. STEIL,

Secretary.

Head Office:

The Corner House,

Johannesburg, 16th May, 1919.

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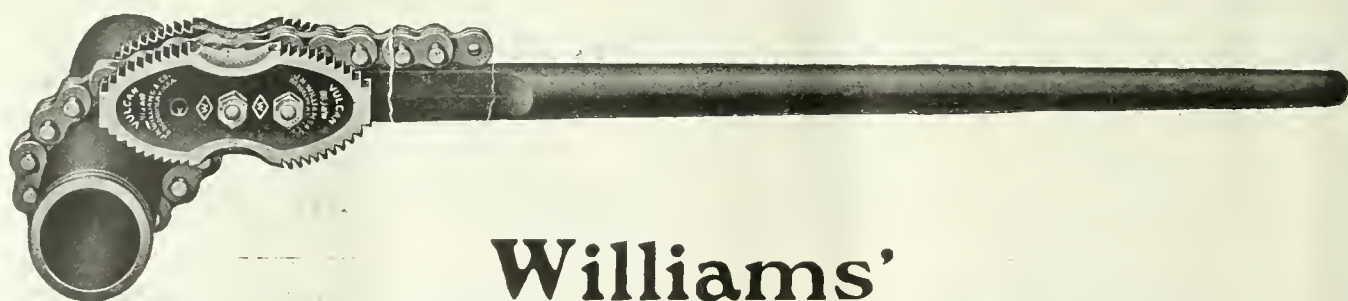
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THE MINERAL RESOURCES OF SOUTH-WEST AFRICA.

DIAMONDS, copper, wide stretches of grazing country, scarcity of water, and a population so minute that it is smaller in number than the square miles of territory—these are the outstanding features of German South-West Africa. It is a country of vast spaces, difficult of access except by railways. The lines as originally laid by the Germans were usually of 2-foot gauge. The State (or Northern) Railway had been widened to the Cape gauge of 3ft. 6in. before the war, and since the conquest by the Union Government the railways have, where possible, been connected up with the Union railway system and converted to the Cape gauge. Before the war the one good deep-water harbour on the south-west coast, Walvis Bay, was British, not German; the Germans had to make the best of two indifferent substitutes, Swakopmund—a bad open roadstead—and Luderitz Bay, without fresh water and with no facilities for direct discharge of cargoes. Now that Walvis Bay has become available and will be equipped with the landing facilities which hitherto it has lacked, the late German Protectorate will have a good harbour (Walvis Bay) in the north and what may be made into a good harbour (Luderitz Bay) in the south. The post-war railway systems, widened to Cape gauge and connecting the ports with the Union lines—and also with the Otavi mining district—will offer a means of communication much more efficient than that upon which the Germans depended.

THE WATER SUPPLY.

The rainfall is least along the coast line and increases from west to east and from south to north. The only perennial rivers run along the northern and southern boundaries; no other rivers show surface water except in the rainy season and here and there in pools. Natural rock reservoirs are to be found in some districts, and when they are absent or inadequate the farmer seeks to prevent the waste of flood water by constructing dams. The Germans had planned several large dams to impound flood waters and had designed to construct them of sufficient strength to withstand wash-aways. Water is to be found in many parts by boring to moderate depths, especially in and near dry river beds. The German Government made advances for boring to progressive farmers. The principal towns, Windhoek, Karibib, Swakopmund and Luderitzbucht, have been supplied by borings, and the mining centres of Otavi and Grootfontein get their water from neighbouring springs. Water is a commodity very precious in German South-West Africa.

DIAMONDS.

Diamonds are, in value, far and away the most important product of South-West Africa, though the best deposits in which they are found are rapidly being worked out. The gravel which contains them lies in a strip along the coast, and no stones have been discovered more than 15 miles from the sea. The deposits were first made known in April, 1908, and were so actively exploited during subsequent years that in 1913 they yielded over 20 per cent. in value of the total diamond output of the world. The yield for that year was 1,284,727 carats, valued at £2,698,500. During 1914 the production of 1913 was left far behind. Up to August, 1914, 5,400,000 carats had been recovered, valued at nine and a quarter millions sterling. The average size of the stones increases steadily from north to south until it reaches a maximum in the Pomona area. The diamonds are quite unlike those washed from the blue ground of Kimberley or the Transvaal. In hardness and brilliancy they resemble Brazilian stones, and though small in size show a quality uniformly good. The largest stone discovered by the Germans was 34½ carats; the average size varies from a fifth to a sixth of a carat. The layers of diamond-bearing gravel are usually from 4 to 6 inches thick, but between Luderitz Bay and Elizabeth Bay they sometimes extend to 25 and even 30 feet. In the rich holdings of Ida Tal, Pomona district, the gravel has yielded 200 carats per cubic metre at a working cost of 2s. 2d. per carat. In the poorer and more distant workings the cost has run up to 35s. a carat. Before

the war the diamond industry employed some 500 whites and 5,000 coloured labourers (Cape boys and Ovambos). The richest and most accessible deposits have already been worked out, and although the recovery of diamonds is considered likely to continue for some time to come, the "life" of the fields was not expected by the Germans to extend beyond 12 or 15 years. No important new areas have been discovered since 1910, though prospecting has been vigorously pursued. The German Government of the Protectorate controlled the sale of diamonds through the Diamanten-Régie, formed in 1900, and in 1914 definite quota was assigned to the individual mining companies. The purpose was to keep the market steady, to maintain profits, and to encourage development. The profits made by companies which secured rich holdings were almost beyond belief. The Koloniale Bergbau-Gesellschaft during the four years 1910 to 1913 distributed dividends amounting in the aggregate to 112 times its capital of £5,025. These dividends, of which the highest was 3,800 per cent. for 1912, were distributed after meeting the heavy Government taxes.

COPPER.

Copper ranks next to diamonds in the minerals of the Protectorate, and, unlike diamonds, looks like establishing itself as an increasingly productive industry. The chief deposits are in the dolomite rocks of the Otavi district, which is connected with Swakopmund by rail. About one-quarter of the line is of Cape gauge, the remainder of 2 feet gauge. Other copper areas are Khan and Ida, in the Swakopmund, and Sinclair, in the Luderitzbucht districts. In 1913 the exports of copper and copper ore were valued at £396,000.

GERMAN EXCLUSIVENESS.

A certain proportion of the capital invested in mining and other companies was drawn from Great Britain and the Union of South Africa, but the Germans did not encourage foreign interests or immigrants. German South-West Africa was well guarded even by its physical features, for not only were the land frontiers practically closed by natural barriers such as the native state of Ovamboland in the north and a wide stretch of the Kalahari towards the east, but the sea-board facilities were limited to two small and unfavourable ports, Swakopmund and Luderitzbucht. These natural defences were strengthened deliberately and skilfully. The necessary excuse for handicapping foreign trade was discovered in the alleged difficulty of providing harbour facilities. It was argued that the interests of shippers and traders alike required the careful regulation of the loading and discharging of cargo. An elaborate contract was drawn up, by which on this pretext the Government granted the Woermann Company a practical monopoly of the landing rights for a number of years. British and other foreign

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firms were thus debarred from employing agents of their own nationality, and all trade, whether of German origin or not, was compelled to pass through German channels. Further, although in the absence of manufacturing industries within the country the imports extended over a very wide range, including almost all the essentials of foodstuffs, clothing, house and farm equipment, machinery and materials for building and construction, the heavy taxes imposed on non-resident commercial travellers under the German régime made it practically impossible for outsiders, canvassing for foreign firms, to compete with the local German merchants. Exports were almost entirely diamonds and copper, of which the ownership lay outside the Protectorate. The profits were thus spent outside the country and did not act as a stimulus to internal trade. The growing copper industry may give rise to a population whose local demands will cause trade movements. Under the Germans both the white officials and the mine labourers were migratory and periodically returned to the countries to which they belonged. The Otavi Copper Mines, far inland, are the main support of 400 miles of railway line which can aid agricultural and commercial development on its route, but the short light line which serves the diamond fields runs through a sandy waste and is of small use except for its special purpose. Before the war one set of German capitalists was drawing a considerable income from the dividends in diamond and copper shares, while another set was annually investing money in South-West African farms. Such trade as developed was kept in German hands under a system by which facilities were given to Germans which were denied to those of other races. Practically all the trade entered and left the Protectorate through the German seaports. Little more than 1 per cent. crossed the land frontiers. Now that railway connection by Cape-gauge lines has been established with the Union the trade by land may be expected to develop.

THE GERMAN FAILURE.

It may be doubted whether the Germans would ever have been able to make a financial success of the Protectorate. Its administration since 1904 had cost the Imperial Government more than £40,000,000, and the economic results, direct and indirect, can scarcely have equalled this total. Even with the help in recent years of the funds derived from diamond taxation, the country's revenues were insufficient to meet the whole cost of administration, and the life of the diamond fields, it must be remembered, may terminate within a few years. It is true that new countries,

like human beings, pass through a period of immaturity, and have to be assisted until they are able to support themselves; but systems of government vary as greatly as systems of education, and may as easily stunt or pervert the development of the community. The labour supply of the Protectorate was wrecked by the German Government's ruthless treatment of the Hereros and Hottentots, and there was at least a danger of agricultural development being held up by the land-owning companies. The Union Government, as administrators of the territory, may be trusted to approach the economic as well as the political problems in a large-minded spirit, and with the practical grasp of South African conditions that is the best guarantee for the country's progress.

PERSONAL.

Mr. Bernard Price, of the V.F.P., left for England this week on a six months' trip.

* * *

Capt. Phillips, Sir Lionel Phillips's second son, has been demobilised on his return from Constantinople, where he was on Gen. Sir H. Wilson's staff. Capt. Phillips was in the Surrey Yeomanry at the outbreak of the war, and after thirteen months in France went to Salonika early in 1916. He had been called to the Bar, but does not intend to practise, and has now entered the service of the Central Mining Corporation (of which his father is chairman), and is devoting himself particularly to the base metal section of the business, which has been increased recently.

UNION CORPORATION, LIMITED.

(Incorporated in the Transvaal.)

NOTICE IS HEREBY GIVEN that the ORDINARY GENERAL MEETING of Shareholders in UNION CORPORATION, LIMITED, will be held in the Board Room, 94, Main Street, Johannesburg, Transvaal, on FRIDAY, JULY 11th, 1919, at 11 a.m., for the following purposes:—

- (1) To receive and adopt the Directors' Report and Accounts for the financial year of the Company ended on December 31st, 1918.
- (2) To appoint a Director in the place of Sir Carl Meyer, Bart., who retires in accordance with the provisions of Article 104, and, being eligible, offers himself for re-election.
- (3) To appoint Auditors in the places of Messrs. Price, Waterhouse and Company and Messrs. F. W. Diamond and English, who offer themselves for re-election, and to fix their remuneration for the past audit.
- (4) To transact any business which under the Articles of Association may be transacted at an Ordinary General Meeting.

Holders of Share Warrants to Bearer wishing to attend or to be represented at the Meeting must produce or deposit their Share Warrants at the Johannesburg Office of the Company at least fourteen clear days previous to the time of the Meeting, or at the London Office or Paris Office at least thirty-five days before the date of such Meeting, together with a statement in writing of the name and address of the holder and the distinctive numbers of the Share Warrants. For Share Warrants so produced or deposited a certificate will be issued entitling the holder to attend and vote in person or by proxy at the Meeting in the same way as if he were a registered member of the Company. The Share Warrants deposited in Johannesburg will be released at any time after the Meeting, and those deposited in London or Paris will be released 20 days before the Meeting.

By order of the Board.

VERNON J. RONKETTI, Secretary.

94, Main Street (P.O. Box 1156),
Johannesburg, Transvaal,
21st May, 1919.

The Sakalava Madagascar Proprietary Oilfields, Ltd.

(INCORPORATED IN THE ORANGE FREE STATE.)

Notice to Shareholders.

NOTICE IS HEREBY GIVEN that a Special General Meeting of Shareholders in the Sakalava Madagascar Proprietary Oilfields, Limited, will be held in the Board Room, Grand National Hotel, Rissik Street, Johannesburg, on WEDNESDAY, the 28th MAY, 1919, at 2.30 p.m., for the following purposes:—

1. To receive and consider the Reports of Messrs. D. A. English, one of the Directors, and A. B. Nicholls, who have just returned from a six months' visit to Madagascar.
2. To discuss the future policy of the Company.

Dated at Johannesburg, this 16th day of May, 1919.

By Order of the Board,

J. H. S. WITHYCOMBE,

Secretary.

147/8 Stock Exchange Buildings,
P.O. Box 2089,
Johannesburg.

THE CRISIS IN THE RAND GOLD MINING INDUSTRY.

Final Appeal to the Government—Mines Must Close Down—The Burden of Increasing Taxation—Minister's Unsatisfactory Reply—A Commission Promised.

WE have been supplied by the Transvaal Chamber of Mines with the following letter for publication:—

The Hon. F. S. Malan,
Acting Prime Minister,
Capetown.

Dear Mr. Malan,

At the request of the Chamber of Mines I had arranged to proceed to Capetown on Wednesday in order once more to impress upon the Government the critical position of the gold mining industry, but as I have unfortunately been prevented from leaving, I think it desirable to put before you in writing the chief points which it was intended to represent personally.

You are aware that on numerous occasions during the last three years we have strongly urged upon the Government that, if it is desired to avoid a serious reduction in the scope of mining operations and the most grievous general distress that will inevitably result therefrom, real practical consideration should be given to the industry, to the extent at least of avoiding as far as possible the placing upon it of further burdens over and above the heavy burdens falling upon and remaining with it as a result of the war.

In the evidence given by me on behalf of the Chamber before the Select Committee on the Gold Mining Industry in February, 1918, the extremely precarious position of a large section of the industry was again clearly set out, and I then suggested what in our minds was a solution which, if given effect to, would have greatly eased the situation as a whole, having in mind the ever-upward trend in the price of commodities and the constantly decreasing supply of native labourers. Nothing was done, however, by the Government as a result of the finding of that Select Committee. Another suggestion we put forward about 18 months ago, which would have had most helpful results for all concerned, was our request to recruit an experimental number of native labourers from north of latitude 22 degrees south, it being our opinion, based on actual experience, that the use of Dr. Lister's anti-pneumococcal vaccine would prevent any undue mortality; the small number introduced experimentally could then have been followed by regular recruitment from these territories, and the situation as a whole would certainly have been saved. But, as you know, permission was refused us, and there again Government and Parliament did nothing to help the industry, which is the main support of the inhabitants of the Union and the main producer of the country's revenue. I fear it is now too late for either or both of our suggested solutions to prevent the disastrous results against which we have struggled so long and with so little help from the Government. The consent to the tropical labour experiment would, it is true, be still valuable as clearing the ground for the future.

The position foreshadowed by the Chamber so many times is now at hand. So far as we can see, nothing can now prevent a number of important mines, employing a large number of Europeans and upon whose operations the prosperity of a considerable section of the Witwatersrand depends, from ceasing operations in the next few months. The situation is one of the utmost gravity, its most serious aspect being the unemployment and distress that are bound to follow. We have tried to avert this calamity by every means in our power; we have warned the Government and the community in season and out of season; we have suggested solutions and methods by which assistance could be given; and the only practical answer we have received is—the imposition and threatened imposition of further and still further burdens.

The attached statement showing the Witwatersrand gold mines divided into four districts (West, Central, Near East and Far East) indicates the great extent to which the present reasonably good results of the Witwatersrand depend upon the eight rich new mines on the Far East Rand. Apart from these eight mines, 16 mines (out of a total of 38) employing 5,545 Europeans, are making an actual loss; and the total working profit of the whole of the Rand, excluding the Far East Rand mines mentioned, was only £365,000 for the three months ended February 28, 1919. The position of the Near East and West Rand group of mines is particularly serious; 22 mines, employing 10,076 Europeans, come under these divisions; no less than 10 of them have made a loss, and the net working profit of the whole 22 was only £68,000. Although the Far East Rand mines are the mines responsible for the bulk of the profits, the remainder of the mines provide the bulk of the expenditure. The amount paid by the latter in salaries and wages and for stores for the year 1918 was over £19,000,000.

We have frequently been told, on placing our views before the Government on particular aspects of the position, that the matter in question has a political aspect, affecting this or that party. The mining industry is outside of politics and is not concerned with any political party. It is perfectly clear, however, that when a large number of European employees are out of work, and when the Witwatersrand, with the other parts of the country, is in a state of depression, all political parties will find themselves compelled to be concerned in the mining industry and in the causes of its decline.

To show the amazing extent to which practical consideration of the industry by the Government is lacking, it is only necessary to refer to the acquiescence in the taxation of the gold mines by the Transvaal Provincial Council, to the manner in which demands for greatly increased benefit for miners' phthisis—increase which make the benefits out of all proportion to those granted in this country for accidents under the Workmen's Compensation Act and in other countries for industrial diseases and accidents—are readily acceded to, and to the apparent possibility that the Government will attempt to make a profit at the expense of the industry out of the new mint and refinery, not to speak of the suggestion to place the mint at Pretoria, for which there cannot be the slightest practical justification.

These and similar points have been placed before the Government many times by the Chamber, and it is unnecessary to repeat them in detail. We still feel it to be our duty, however, to most seriously warn the Government that the expected crisis in the continuance of the country's main industrial enterprise—the Witwatersrand gold mines—is imminent, and will be increased or decreased in proportion to the extent to which consideration is shown the industry by the Government.

It is proposed to publish this letter, but this will not be done until you have had an opportunity of replying.—Yours sincerely,

E. A. WALLERS,

President, Transvaal Chamber of Mines.

Johannesburg, May 9, 1919.

MINISTER'S REPLY.

To the above letter Mr. H. Warington Smyth, Secretary for Mines and Industries, has replied as follows, under date May 16:

Sir,—I am instructed by the Hon. the Acting Prime Minister to acknowledge receipt of your letter of May 9, dealing with the critical position of certain mines on the Witwatersrand, which has had the careful consideration of the Government.

You refer to certain suggestions which have been put forward from time to time to try to meet the position which was foreseen, and appear to attach a certain amount of blame to the Government for not adopting these suggestions. It will, however, be within your knowledge that a Select Committee considered them in detail a year ago, and was unable to recommend the adoption of any one of them, with the exception of the proposal to obtain relief from the excessive freight and insurance on bullion. In regard to this the Government made representations and the rates have since been reduced.

With reference to the proposal to reopen recruiting for native labourers from north of latitude 22 degrees south, the Minister desires me to point out that neither Parliament nor the country would have endorsed this line of action, and it is in the Government's opinion no more practicable to carry it through now than it was a year ago.

Referring to your remarks in regard to awards for miners' phthisis, the Minister desires me only to observe that no Government could disregard the suffering which has been caused by this disease, and that any burdens imposed on the industry with the object of mitigation of this suffering and prevention of its causes have not been imposed lightly, but after the most exhaustive examination and consideration of the causation and results of the disease, and to meet the insistent demands of the situation which has unfortunately been created in the past.

The Minister recognises the serious import of the present situation to the population of the Rand and to the country as a whole, and trusts that every effort will be made to avoid the closing down of any mines which may still contain extractable ore, and especially of those mines which have considerable areas of unopened ground and which thus have a possibility of re-establishing themselves on a payable basis. Should closing down, however, become unavoidable, the Minister considers that, with a view to reducing as far as possible the dislocation and hardship likely to be caused by the closing down of mines, it is of the utmost importance that arrangements should be made for mines to cease operations with the maximum possible interval of time between the dates selected for closing down. It will be obvious that were several mines to close down simultaneously, or shortly after each other, the difficulties to be faced would be accentuated, and it is desirable therefore to avoid this as far as possible.

The Government also considers that the appointment of a small Commission to report on the reasons and necessity for closing down of each mine before the date of cessation of operations would have a valuable effect, and would tend to keep public opinion informed as to the causes which are operating in connection with the industry. Such a Commission should, in the opinion of the Government, be composed of a Government representative and one or more representatives of the Chamber and the workers.

With regard to the mint, I have to state that the Government is considering the advantages of establishing the site at some favourable point on the Witwatersrand.

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THE OUTLOOK FOR THE SOUTHERN VAN RYN REEF GOLD MINING CO., LTD.

THE following circular has been issued by Mr. W. Bleloch, Chairman of the Southern Van Ryn Reef Gold Mining Company, Ltd.:—As announced in the press, an amicable arrangement has been concluded with the Consolidated Gold Fields of South Africa, by which it is made possible to open up the Southern Van Ryn mine in accordance with its original promotion as an outcrop proposition instead of a deep level. The Consolidated Gold Fields have surrendered the technical and administrative control, and for the present their representatives have retired from the board. The new board has decided that shareholders should be informed at the earliest possible moment of the financial position of the company and the mining policy now to be pursued.

Finance.—A detailed statement of the financial position at the 30th April is appended hereto. From this it will be seen that after taking in the amounts to be received in respect of the options exercised at 31st December, 1918, the cash assets amount to £92,309. The authorised capital of the company is 615,000 shares of the nominal value of £1 each, of which there have been issued 339,224 shares of the nominal value of £1 each, leaving under option and still to be issued 275,776 shares. If all these shares are taken up the cash assets of the company will be increased by £294,526, which, together with the sum of £92,309 mentioned above, will give a grand total of £386,835.

The Mine and its Reefs.—The company owns 1,662 claims, free and unencumbered, carrying both the Van Ryn Reef and the Nigel Reef throughout the entire length of the property, over three miles in extent. These reefs dip with a sharp declination of from 45 degrees to 60 degrees to the west, and this gradient assures large tonnages per claim. The profits to be made are not subject to any percentage payments such as the Government requires from the leased areas in the neighbourhood, but, subject only to the ordinary profits tax, profits belong to shareholders. Both the Van Ryn and the Nigel Reefs have been located by shafts and boreholes, and their sub-outcrops come within from 50 to 100 feet of the surface. The principal reef, the Van Ryn, was opened up in the old Henderson Nigel shaft, at the south end of the property, at a depth of 217 feet. It is of great width, and the records of the reef at this place show payable values. A new shaft will be sunk near the Henderson Nigel shaft, and active development of the Van Ryn Reef will begin at once. On the northern portion of the property an incline shaft has been sunk on a reef which is now identified with practical certainty as the Chimes Reef—that is, the reef in the upper portion of the Van Ryn formation, upon which the New Modderfontein mine was originally floated, and on which that company developed 200,000 tons of payable ore. From this reef the Van Ryn Estates Company, too, is also drawing a portion of its ore supply. The values exposed in the incline shaft on this reef over the very limited length of 100 feet sunk on the reef, show an average value of 5·89 dwts. over 18 inches. But the values found in prospecting shafts sunk to the sub-outcrop of this reef, both to the north and to the south of the incline shaft, show much better values—in one shaft 12 dwts. over 24 inches, and in the other 15 dwts. over 18 inches. Accordingly it has been decided to drive both north and south from the incline shaft to ascertain whether pay shoots exist on this reef as indicated by the values found in these prospecting shafts. Simultaneously with this work shallow boreholes will be put down to the east of the No. 1 incline (Chimes Reef) to locate the sub-outcrop of the Van Ryn Reef in this northern section. The location of this reef is made easy by the following data. The known outcrop sections of the Far East Rand, at the New Kleinfontein, the Van Ryn, and the New Modderfontein mines to the north establish the position of the Van Ryn Reef relative to the Chimes Reef. This is confirmed by outcrop sections proved to the south during the last twelve months on Tulipvale and the town lands of Heidelberg, where during that period the Chimes Reef and the Van Ryn

Reef and its leaders have been opened along a distance of about six miles. Further, the many boreholes and shaft sections of the deep level mines of the Far East Rand fix this relative position definitely. So that with the steep angle of inclination in the northern part of the Southern Van Ryn area it is expected to cut the Van Ryn Reef between 400 and 500 feet east of the No. 1 incline on the Chimes Reef. This preliminary and inexpensive boring should be accomplished within three months from date, and a commencement of sinking a main haulage shaft on the sub-outcrop of the Van Ryn Reef in this northern section should be possible within a fortnight or so from the date when this reef is cut in the borehole. The Nigel Reef also will be opened up in this northern section as soon as the work above described is well under way. The sub-outcrop of this smaller but yet valuable reef should be found in this northern section about 1,400 feet back from the sub-outcrop of the Van Ryn Reef—that is, in a position within the eastern boundary of the company's property. It will therefore be possible to proceed with development both on the Van Ryn and Nigel Reefs, and on the Chimes Reef, too, if that reef should prove to be payable. After consultation with the technical staff the board is advised that, with the knowledge of the reefs now available, the work of opening up and developing the sub-outcrop areas of these reefs will be very inexpensive compared with the costly nature of similar work on the neighbouring deep level mines; and the policy will now be to open up sufficient pay ore to begin production within twelve months. The intention is to lay out the reduction plant on a system different from that imposed upon the deep level mines by their enormous capitalisation. Following the policy of the original outcrop propositions which established these goldfields from the first, this company will not require the great capital outlay demanded by costly deep level shafts, so that from small beginnings the plant can be added to from time to time and brought to any capacity which may be required when the ore resources of the property have been developed on a scale consistent with their magnitude. This statement of the company's affairs will enable shareholders to judge of the position for themselves, but in presenting it the board thinks it right explicitly to point out:—

1. That the Southern Van Ryn, being an outcrop mine on the Van Ryn Reef, has the same outstanding advantages as the original outcrop mines of the Far East Rand. It was the confidence established by the results from the Kleinfontein, Van Ryn, New Modder and Modder B. mines—all outcrops on the Van Ryn Reef—and the profits derived therefrom which enabled the deep level mines to be financed. In the Southern Van Ryn we possess the first Van Ryn Reef outcrop mine to be opened for 28 years.



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2. That the limited tonnages developed on mines whose operations are confined to the smaller and less important Nigel Reef, and where mining on the Van Ryn Reef is not yet carried on, afford no criterion of the value of the Southern Van Ryn property. It is the Van Ryn Reef, with its great tonnage and never-failing values where opened up by adequate development, which has made the Far East Rand, and now that the control has been resumed by a board which, on the advice of its technical staff, has determined to make the opening up and development of the Van Ryn Reef the principal object of its policy and the development of the Nigel Reef and other reefs secondary, although important aims, it can be confidently expected that the mine will before long be brought into line as a producer with the other great mines working the Van Ryn Reef on the same Far East Rand area on which it is situated.

Mr. C. J. Tutt has resigned his seat on the board and has been appointed consulting engineer to the company, and it is with his approval that the board has undertaken the policy of bringing the mine to a producing stage on an initial scale with the £90,000 working capital available. Later, arrangements will be made for working on a larger and larger scale as development and pay tonnages increase. Mr. Tutt has given his assurance that this can be done.

It will be seen from the statement of the financial position that if the existing options held by shareholders are exercised, an additional amount of £294,526 working capital will be available. There is every likelihood that in view of the new policy now adopted shareholders will take up their options as they fall due. This additional working capital of nearly £300,000 over and above the £90,000 presently available will be sufficient to bring the mine into the rank of a great producer and without increasing the capital beyond the £615,000 at present authorised. It will be evident that this is only possible by virtue of the mine's commanding position

as an outcrop proposition on the Van Ryn Reef with a sub-outcrop area of approximately three miles in length and with the Nigel and Chinnies Reefs available along the same distance as auxiliary sources of ore supply.

Mr. L. W. Macer, formerly of the staff of the Brakpan Mines, has been appointed manager, and has already taken up his duties. Monthly reports will be issued to all registered shareholders of the progress being made in the opening up of this property.

By Order of the Board,
W. BLELOCH, *Chairman*.

INVESTOR'S DIARY.

FORTHCOMING COMPANY MEETINGS.

- May 27.—New Primrose G.M. Co., Ltd.—Annual Ordinary General Meeting, at 12 o'clock.
- May 27.—New State Areas, Ltd.—Second Ordinary General Meeting, at 12.30 p.m.
- May 27.—New Unified Main Reef G.M. Co., Ltd.—Twenty-first Ordinary General Meeting, at 12.15 p.m.
- May 27.—Ginsberg G.M. Co., Ltd.—Twenty-fourth Ordinary General Meeting, at 11.30 a.m.
- May 27.—Glencairn Main Reef G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 11.45 a.m.
- May 28.—Consolidated Langlaagte Mines, Ltd.—Sixteenth Ordinary General Meeting, at 10.40 a.m.
- May 28.—Government Gold Mining Areas (Modderfontein) Consolidated, Ltd.—Ninth Ordinary General Meeting, at 3.30 p.m.
- May 28.—Langlaagte Estate and G.M. Co., Ltd.—Twenty-eighth Ordinary General Meeting, at 12 o'clock.
- May 28.—Randfontein Estates G.M. Co., Ltd.—Twenty-sixth Ordinary General Meeting, at 2.45 p.m.
- May 28.—Van Ryn Deep, Ltd.—Fourteenth Ordinary General Meeting, at 3.10 p.m.
- May 28.—Witwatersrand G.M. Co., Ltd.—Annual Ordinary General Meeting, at 11.30 a.m.
- May 30.—East Rand Proprietary Mines.—Twenty-third Ordinary General, Board Room, Corner House, at 11 a.m.
- June 18.—Crown Mines, Ltd., 23rd ordinary general meeting, 11 a.m.
- June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
- June 19.—Durban Roodepoort Deep, Ltd., at 12 noon.
- June 20.—City Deep, Ltd., at 12 noon.
- June 20.—Robinson G.M. Co., Ltd.—Twenty-ninth Ordinary General Meeting, at 2.30 p.m.
- June 24.—Village Deep, Ltd., at 2.30 p.m.
- June 24.—Geldenhuis Deep.—Twenty-fourth Ordinary General Meeting at 11 a.m.
- July 17.—Modder Deep Levels, Ltd., Extraordinary General Meeting. Consolidated Building, 11.30.

Transvaal Libel Action: Appeal Allowed.

In the Appellate Division of the Supreme Court recently, Mr. Justice Solomon delivered judgment (Mr. Justice Maasdorp and Mr. Justice De Villiers concurring) allowing the appeal from the decision of Mr. Justice Gregorowski in the action brought by Alfred Falkland Robinson against Alexander Stanley Benson and Colin Simpson to recover damages for libel. The libel complained of was a statement made on various occasions by the defendants that the plaintiff Robinson was trading with the enemy, the contention of the defendants being that two companies floated by the plaintiff in the Transvaal in May, 1915, were in effect a branch of a large and important German company known as Orenstein Arthur Koppel Co. The trial Judge awarded the plaintiff damages, but the Appeal Court reversed this decision and entered judgment for the defendants (Benson and Simpson) on the ground that it was admitted that the publication of the statements made by the defendants, if true, was in the public interest and that the defendants had proved their plea of justification.

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THE "J.C.I." SUBSIDIARIES IN THE MARCH QUARTER.

Govt. Areas Profit, £225,419—Randfontein Developments—Decline of the Ginsberg—Progress at New States.

QUARTERLY reports of the subsidiaries of the Johannesburg Consolidated Investment Company for the three months ended with March last have just been issued, and they make interesting and satisfactory reading. Summarising the particulars of productive operations, the results secured in the period under review were as under:—

	Profit.	Costs per ton.
Consolidated Langlaagte ...	£29,105	19 9
Ginsberg	1,482	22 2
Government Areas	225,419	21 5
Langlaagte Estate	35,979	19 10
New Primrose	3,867	17 6
New Unified	6,105	15 1
Randfontein Central ...	29,419	21 7
Van Ryn Deep	150,448	21 9
Witwatersrand	14,481	20 3

At the Consolidated Langlaagte the expenditure on capital account amounted to £1,664, and debenture interest £1,375. There was a decrease of 1s. 4d. per ton in the grade, and 11d. per ton in the working costs, as compared with the previous quarter. The quantity of ore crushed was increased by 15,500 tons, and the working profit for the quarter shows an increase of £917. The development footage sampled totalled 2,897 feet, and gave the following results: Payable, 1,396 feet, having an average value of 44.11 dwts. over 9.80 inches of reef; unpayable, 1,694 feet, having an average value of 9.85 dwts. over 10.54 dwts.

The quantity of ore crushed at the Ginsberg was 4,820 tons less than during the previous quarter. The grade showed an improvement of 1s. 5d. per ton, but working costs were higher by 2s. 6d. per ton, with the result that the working profit for the quarter was £1,969 less than for the quarter ended the 31st December, 1918. The ore reserves are now very nearly exhausted, and it is doubtful whether profitable operations can be carried on much longer.

The expenditure on capital account at the State Mines amounted to £8,235. There was an increase of 14,000 tons in the quantity of ore crushed as compared with the previous quarter, but the grade was 1s. 1d. per ton lower, and the working costs 3d. per ton higher, with the result that the working profit was £10,307 less than the preceding three months. The development footage sampled totalled 7,030 feet, and gave the following results: Payable, 5,110 feet, having an average value of 14.1 dwts. over 48 inches of reef; unpayable, 1,920 feet, having an average value of 3.8 dwts. over 39 inches. The payable ore reserves were increased by 229,000 tons, and now stand at 9,674,000 tons. During the quarter there has been a considerable improvement in the native labour position.

The Langlaagte Estate's expenditure on capital account amounted to £4,681. The grade showed an improvement of 3d. per ton, but, as the working costs were 8d. per ton higher, and the quantity of ore crushed was 10,060 tons less than the previous quarter, the working profit shows a reduction of £5,490 for the period. The development footage sampled totalled 2,400 feet, and gave the following results: Payable, 1,402 feet, having an average value of 31.1 dwts. over 14 inches of reef; unpayable, 998 feet, having an average value of 7.8 dwts. over 15 inches.

At the New Primrose the tonnage crushed was 1,300 tons less than that for the previous quarter. The grade showed an improvement of 10d. per ton, but, as the working costs were increased by a similar amount, the working profit was £155 lower than for the quarter ended the 31st December, 1918. The development footage sampled totalled 128 feet, and gave the following results: Payable, 46 feet, having an average value of 7.7 dwts. over 50 inches of reef; unpayable, 82 feet, having an average value of 3.2 dwts. over 32 inches.

At the New Unified the grade and the working costs were 1s. 4d. and 8d. per ton respectively lower than the previous quarter, but, as there was an increase of 2,100 tons in the quantity of ore crushed, the working profit was only reduced by £859. The development footage sampled totalled 115 feet, and gave the following results: Payable, 15 feet, having an average value of 24.62 dwts. over 8 inches of reef; unpayable, 100 feet, having an average value of 7.75 dwts. over 8 inches.

At the Randfontein Central the expenditure on capital account amounted to £49,041 and debenture interest to £36,470. The increase of 29,800 tons in the quantity of ore crushed taken together with a reduction of 1s. 7d. per ton in the working costs, and an improvement of 7d. per ton in the grade, resulted in a working profit of £26,915, as against a loss of £16,821 for the previous quarter. The sundry revenue is £171 less than for the quarter ended the 31st December, 1918. Although there has been some little improvement in the native labour position the shortage is still acute and is severely limiting operations. The shaft sinking accomplished was as follows: No. 3 (south) shaft 22 ft., total depth 1,812 ft.; No. 7 (mynpacht) shaft 159 ft., total depth 3,133 ft.; north vertical shaft 461 ft., total depth 2,518 ft.; south vertical shaft 268 ft., total depth 2,379 ft. The development footage sampled totalled 9,927 feet, and gave the following results: Payable, 8,770 feet, having an average value of 26.1 dwts. over 15 inches of reef; unpayable, 1,157 feet, having an average value of 7.7 dwts. over 22 inches.

The expenditure on capital account amounted to £1,559 at the Van Ryn Deep. The yield showed a decrease of 6d. per ton, and the working costs an increase of 1d. per ton, as compared with the previous quarter. There was an increase of 5,350 tons in the quantity of ore milled, and the working profit was correspondingly increased by £2,192. The development footage sampled totalled 919 feet, and gave the following results: Payable, 640 feet, having an average value of 17.5 dwts. over 38 inches of reef; unpayable, 279 feet, having an average value of 7.0 dwts. over 21 inches. During the quarter there has been an improvement in the native labour position.

At the Witwatersrand the expenditure on capital account amounted to £8,895. The quantity of ore crushed was 3,100 tons more than that for the previous quarter. Working costs and grade were 1d. and 6d. per ton respectively lower, and the working profit shows a decrease of £1,388. The development footage sampled totalled 1,670 feet, and gave the following results: Payable, 1,170 feet, having an average value of 9.8 dwts. over 11 inches of reef; unpayable, 500 feet, having an average value of 4.7 dwts. over 51 inches.

At the developing property of the group, the New State Areas, the expenditure on capital account amounted to £59,718. Shaft sinking: Sinking at the south shaft was re-started with the permanent headgears and hoists on the 17th February. 141 feet were sunk during the quarter and 84 feet concreted. The total depth of the shaft is now 244 feet. At the north shaft no sinking has been done during the quarter pending the completion of the surface equipment. Surface equipment: South shaft: The foundations for the 50-drill compressor have been completed, and the compressor is partially erected. The compressor house is under construction. North shaft: The erection of the Yates & Thom hoist has been completed. The engine room has not been erected owing to the strike in the building trades. The erection of the Ingersoll hoist is proceeding; two boilers are complete, but work on the remaining two has been stopped owing to the strike. The headgear and ore bins are completed. General: During the quarter the transformer house was completed and the mine workshops and shaft equipment are now supplied with electric light and power. The wiring of the quarters is in hand.

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THE WEEK IN THE SHAREMARKET.

Disappointing Ending—Move in Leeuwpoots and African Farms.

At the opening on Saturday only one sale was recorded, viz., Modder East at 21s. Prices on High 'Change were generally firm and better in the cases of Government Areas, Van Ryn Deeps, Modder Deeps and New Modders. Geduld Props fell back 1s. 6d. and Zaaiploats were weak at 10s. 1½d. sales. The market closed firm, with an upward tendency. On Monday morning the tone was still good as indicated by opening sales of Geduld Props at 49s. 6d.; Modder Easts at 21s. 4½d.; Government Areas at 96s.; and Makganyenes at 50s. Considerably more business than usual was put through at the call, with advances in City Deeps, East Rand, Modder B., New Modders, New States, Government Areas, Springs, Van Ryn Deeps and Geduld Props. The only set-back in any of the important stocks was Modder Deep. Business at the opening on Tuesday was restricted to a sale of T.G.M. Estates at 14s. and one of Makganyenes at 52s. 6d. The call was dull and dealings limited. The features were the advances in Leeuwpoots from a selling price of 22s. 6d. to a buying one of 23s. 9d. African Farms, after a long period of quiescence, advanced in sympathy to 14s. 9d., or a rise of 1s. 9d. Geduld Props were in good demand. The Modder stocks, with the exception of Modder Bs., were quiet, Modder East losing 3d. Van Ryn Deeps were also weaker and dropped 6d. The market opened dull on Wednesday with only one sale of Crown Diamond at 21s. 9d. The same tone prevailed at the call with a reduction of business in consequence. There was little change in prices, but the tendency was easier. The weakening tendency on Wednesday was accentuated on Thursday, when practically every stock was lower at the call, with the exception of Coronation Freeholds, which have turned out a small but profitable speculation, the price having doubled itself during the last few weeks. The only sale of importance was one of two thousand Crown Diamonds at 21s. 6d.

The dealings during the week in outside stocks were as follows:—Sales: Makganyene, 50s. and odd lots at 52s. 6d. to 50s.; Phoenix, 1s. and 1s. 1d.; Compound Diamonds, 2s. 6d., with buyers at 3s.; Sakalavas, 9s. 6d. and 9s.; Union Tins, 5s. 3d.; Monteleos, 14s. to 11s.; Mauss Syndicate, 25s.; South-West Diamonds, 30s. Buyers and sellers: New Farms, 1s. 6d. buyers; Koodoos' Vendors, 18s. seller; Henderson's Options, 10d.—1s.

The alterations in prices on Friday morning were:—Sales: Mines Selection 23s. 6d.; Geduld Options, 13s.; Hume Pipes, 27s.; Nigel, 6s.; Southern Van Ryn, 8s. 9d.; Springs, 48s.; Van Ryn Deep, 70s. Buyers and sellers: African Farms, 13s. 6d.—14s.; City Deeps, 52s.—54s.; Coronation Colliery, 56s. buyer; East Rands, 6s. 4d.—6s. 5d.; Geduld Props., 48s. 3d. buyer; Leeuwpoots, 22s. 3d.—22s. 6d.; Wit. Deep, 12s. 6d.—13s.; Zaaiploats, 10s. 3d.—10s. 6d.

	Fri. 16th.	Sat. 17th.	Mon. 19th.	Tues. 20th.	Wed. 21st.	Thurs. 22nd.
African Farms	12 6*	12 6*	13 0	14 9	14 7*	14 0*
Anglo-Americans	22 0*	21 6*	21 6*	21 0*	23 6*	—
Apex Mines	7 0*	7 0*	7 0*	7 1*	7 1*	7 1*
Bantjes	2 2	—	2 1*	2 1*	2 2*	2 2*
Brakpans	63 0*	63 0*	63 0	64 0*	64 0*	64 0*
Breyten Collieries	—	8 0*	—	—	—	—
Brick and Potteries	—	—	—	4 0*	—	4 0*
British South Africa	18 9*	—	—	—	—	18 6*
Bushveld Tins	1 6†	—	1 3	1 6†	1 0*	1 0*
Cinderellas	3 6*	3 6*	4 0	4 1*	4 3*	4 3*
City and Suburbans	5 9*	5 9*	5 9*	6 0	6 0*	—
City Deeps	52 0*	52 0*	55 0	51 9*	52 3*	51 6*
Clydesdale Collieries	—	23 9*	24 0*	24 0*	24 0*	24 0*
Cons. Investment	26 0*	—	26 6*	26 6*	27 0	28 0†
Cons. Langlaagtes	17 0*	—	—	17 0	17 6*	—
Cons. Main Reefs	9 9*	9 9*	10 0	10 0	9 9*	9 9
Cons. Mines Selection	23 0*	24 0†	24 0*	23 0*	22 3*	—
Coronation Collieries	—	—	—	—	60 0†	55 0*

*Buyers. †Sellers. aOdd lots. bEx London.

	Fri. 16th.	Sat. 17th.	Mon. 19th.	Tues. 20th.	Wed. 21st.	Thurs. 22nd.
Coronation Freeholds	1 6*	1 7	1 7*	1 9*	2 3	2 5
Coronation Syndicates	1 3*	1 3*	—	—	1 3*	—
Crown Diamonds	21 3*	21 3*	21 6	21 9	21 9	21 6
Daggafonteins	23 3	23 3*	23 0*	23 6*	23 6	23 3*
East Rand Coals	2 7*	2 7	2 7*	2 7*	2 8*	2 8*
East Rand Deeps	0 9*	—	0 9*	0 9*	0 9*	0 9*
East Rand Minings	17 0*	17 0*	17 0*	18 0†	18 0†	18 0†
East Rand Props.	5 9	6 0	6 6	6 6	6 3*	6 3
East Rand Debentures	£62*	—	£62*	£62*	£62*	£64*
Eastern Golds	—	—	1 3*	1 3*	1 3*	1 3*
Frank Smith Diamonds	4 4*	4 4*	4 6	4 7	4 6	4 4
Geduld Props.	50 0	48 3	50 3	50 6	50 3	49 3*
Ginsbergs	1 0*	1 0*	1 3*	1 0*	1 0*	1 1*
Glencairns	—	1 0*	1 0*	1 0*	1 0*	1 0*
Glencoe Collieries	—	6 0*	6 0*	—	—	—
Government Areas	94 0	95 3	96 6	96 0	95 6*	95 3
J'burg Board of Exors.	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	4 0†	4 0†	4 0†	4 0†	—	4 0†
Klerksdorp Props.	1 1*	1 1*	1 1*	1 1*	1 1*	1 1*
Knight Centrals	7 2†	6 11	6 9*	7 3	7 0	7 0
Knights Deeps	6 6†	6 3†	6 3†	6 3†	—	5 0*
Lace Props.	19 0*	18 9	19 0*	18 3*	18 6*	—
Leeuwpoot Tins	21 9*	22 3	22 0*	23 9	24 0	23 9*
Luipaardsvlei	—	1 6*	—	2 0*	2 3*	3 0*
Lydenburg Farms	8 4*	8 4*	8 5*	8 7	8 9†	8 7*
Meyer and Charltons	85 0*	—	—	—	—	—
Middelvels	—	1 0*	1 0*	1 0*	—	1 0*
Modder B.	160 0	160 0*	165 0	166 3	163 9*	162 6*
Modder Deeps	157 0	159 0	157 6	157 6*	158 0*	155 0*
Modder Easts	21 3	21 1½	21 4½	21 0	20 10½	20 9
Do. Options (3 years)	3 6	3 6	3 4*	3 3*	3 4*	3 2*
Do. Options (4 years)	5 0	5 0*	5 2*	5 1	5 3†	4 10
Hume Pipes	28 0*	28 0*	28 6	28 3*	27 6*	—
Natal Navigation Colls.	—	—	22 0*	22 0*	22 0*	—
National Banks	£15*	£15½	£15½*	£15½*	£15½*	£15½*
New Boksburgs	—	1 0*	—	2 0†	—	1 3*
New Eland Diamonds	—	28 0*	28 6†	28 6†	—	28 6†
New Eras	9 9*	9 9*	9 9*	9 8*	9 7*	9 7*
New Geduld Deeps	4 9†	—	—	4 7*	4 6*	4 7*
New Horriots	—	10 6†	—	—	—	—
New Kleinfonteins	9 9	9 6	9 6	10 3	10 0*	10 0
New Modders	£26½	£26½	£26½A	—	—	£26½A
New Unifeds	4 0†	4 0†	4 0†	4 0†	4 0†	4 0†
Nigels	—	—	—	—	5 6*	5 6*
Nourse Mines	12 0*	12 0*	12 0*	12 0	11 3*	11 3*
Premier Preferreds	142 6*	142 6*	142 6*	142 6*	142 6*	145 0*
Pretoria Cements	68 0*	68 0*	68 0*	68 0*	68 0*	68 0*
Princess Estates	2 1*	2 0	2 0*	—	—	—
Rand Collieries	3 0*	—	3 6	3 3*	—	3 3*
Rand Mines	—	—	—	—	—	60 0†
Rand Nucleus	1 9†	1 9†	1 9†	1 9†	1 3*	1 3*
Rand Selections	—	74 0*	74 0*	76 0†	—	74 0*
Randfontein Deeps	5 0	4 8*	4 9	4 9†	4 6*	4 6*
Randfontein Estates	14 3	14 0*	14 9	14 3*	14 6*	14 0*
Roberts Victors	12 0*	13 0	—	—	13 6†	13 6†
Rooibergs	4 6	4 4	4 6	4 6*	4 1*	4 1*
Roodepoort Uniteds	2 0*	—	3 1*	2 9*	—	2 0*
Ryan Nigels	3 6	3 3*	3 3*	3 3*	—	3 3*
Shebas	2 0†	1 9†	1 0*	1 1*	1 1*	1 3*
Simmer Deeps	—	—	1 6†	1 6†	1 6†	1 6†
S.A. Breweries	—	—	33 6*	33 0*	—	33 0*
S.A. Lands	5 11*	6 0*	6 1	6 0*	6 0*	6 0*
Springs Mines	49 6	48 9*	49 6	49 3	49 3	48 3
Sub Nigels	19 10†	19 9*	19 9*	19 6*	19 6	19 3
Swaziland Tins	20 0†	20 0†	20 0†	20 0†	20 0†	20 0†
Transvaal Lands	28 9*	28 9*	28 9*	28 9*	—	28 0*
Transvaal G.M. Estates	14 3*	14 0*	14 0*	12 9*	—	13 6*
Van Ryn Deeps	70 0	70 6	71 0	70 6	70 0*	70 3
Van Dyks	2 9*	3 0†	3 0†	2 9*	3 0†	3 0†
Village Deeps	12 0*	13 0*	13 0*	13 9	13 0*	14 0†
West Rand Cons.	3 1*	—	3 0*	5 3*	—	—
Western Rand Estates	1 6*	—	—	1 6*	—	1 6*
Witwatersrands	17 6†	17 6†	17 6†	17 6†	—	17 6†
Wit. Deeps	13 0*	13 0*	13 0*	13 0*	13 0*	13 0*
Wit. Townships	—	—	25 0†	—	—	24 0†
Woluhuters	—	—	1 11*	2 0	1 11*	1 11*
Zaaiploats Tins	11 3	10 1½	10 9	10—3*	10 4	10 0
New State Areas	23 9	23 7*	24 9	24 9	24 3*	24 3
Southern Van Ryns	8 6	8 6*	8 6*	9 6	9 4½	9 0*
S.A. Alkalis	15 0†	17 0†	15 0†	12 6*	12 0*	12 6*
Tweefontein Collieries	23 0*	—	22 9*	22 9*	24 6	22 6*
Union Corporations	15 6	—	—	—	15 6*	15 6*
West Springs	21 6	21 3*	22 3	22 9	22 9	22 6
Do. Options	—	—	7 3	7 0*	7 0	7 0*

There were sales of Union 5 per cents. up to £103.

*Buyers. †Sellers. aOdd lots. bEx London.

LATEST REPORTS FROM THE CENTRAL MINING RAND MINES GROUP.

Progress at the New Modder—Modder East Outlook Improving—Position at the Ferreira Deep and Crown Mines.

NEW MODDERFONTEIN.

The payable reef disclosures during the quarter were as follows: Main Reef Leader, 930 ft., width 15 ins., assay value 44.0 dwts. The improved native labour situation resulted in a gradual increase in output, the improvement totalling 26,000 tons and £13,750 in working profit over the preceding quarter. Development operations were resumed on a larger scale, which it is hoped will show a further increase during the current quarter.

CROWN MINES.

The payable reef disclosures were as follows: Main Reef Leader, 3,260 ft., width 26 ins., assay value 18.7 dwts.; South Reef, 840 ft., width 28 ins., assay value 13.9 dwts. Operations were again restricted owing to the indifferent labour supply, which only commenced to improve late in the period covered by this report. There was a slight improvement in output of 11,000 tons, the yield was 5d. a ton higher, but working costs increased 1s. 1d. per ton milled, the net result being a decrease in profit of £11,770 compared with the preceding quarter. General development operations were increased and reef disclosures were encouraging. In addition to the footage shown above, No. 15 shaft was sunk 543 feet to a depth of 1,468 feet, and No. 5a 52 feet to a depth of 64 feet. The native labour force at the end of the quarter was 13,083, as compared with 12,432 at the end of December, 1918.

FERREIRA DEEP.

The payable reef disclosures were as follows: Main Reef Leader, 190 ft., width 14 ins., assay value 32 dwts.; South Reef, 15 ft., width 16 ins., assay value 25 dwts. The outcrop reduction plant was closed down at the end of March; since then all ore has been milled at the Deep plant, which is now capable of treating 36,000 tons monthly. Economy should result from the operating of the single plant. During the quarter the supply of native labour continued to be quite inadequate for the requirements of the mine.

BANTJES CONSOLIDATED.

Crushing finally ceased on January 29, when the cleaning up of the reduction works was taken in hand and is still in progress. The total gold recovered for the quarter was 3,168 ozs. The revenue derived from the gold recovered during the quarter amounted to £13,269 6s. 11d., the expenditure for the same period being £6,223 18s. 9d., leaving a profit for the quarter of £7,045 8s. 2d. The dismantling of pumps, pipes and tracks was completed on February 4, when all underground work actually ceased. Six drives are being driven by the Consolidated Main Reef Mines and Estate, Ltd., into the claim area leased to that company. The exploratory drive which is being continued by the Consolidated Main Reef Mines and Estate Company has been advanced 184 feet and has now reached a total distance of 635 feet from the Consolidated Main Reef Mines and Estate Company's own boundary; it has yet to be driven about 365 feet before reaching the western boundary of the leased area, when it will enter this company's own claim ground, and will then have to be driven about 2,500 feet to reach the point where this company's incline shaft would intersect it.

DURBAN ROODEPOORT.

The payable reef disclosures were as follows: Main Reef, 540 ft., width 25 ins., assay value 14.0 dwts.; South Reef, 620 ft., width 6 ins., assay value 44.2 dwts. Working costs show an increase of 1s. per ton milled, which, with a slightly lower tonnage treated, accounts for a decrease in the profit of £3,277.

MODDERFONTEIN EAST.

Of the quarter's development footage the payable portion of 1,105 feet, or 51 per cent., averaged 24.1 over 21 ins., or 506 inch dwts., whilst of the development to date the payable portion of 4,232 feet, or 45 per cent., has averaged 28.6 dwts. over 17 ins., or 486 inch dwts. The most favourable features to which attention may be directed are: (1) No. 1 main incline, which has hitherto disclosed ore of indifferent value, has shown marked improvement, apart from the fact that the 255 feet sampled for the quarter averaged 406 inch dwts., the last 90 feet disclosed 871 inch dwts.; (2) the 21st level drive south continued in high grade ore; (3) indications point to the existence of good grade ore both to north and south on the 22nd level, which has just been commenced from No. 1 incline. Sinking operations in No. 2 shaft have been badly handicapped by heavy feeders of water and fissured ground. The water baled and pumped averaged nearly half-a-million gallons per day and taxed the equipment to its utmost capacity. The footage sunk was 109 feet, bringing the total depth of the shaft to 1,046 feet. The addition of an extra boiler to the steam plant and a connection to the air compressor plant at No. 1 shaft will relieve the situation, and it is expected that better progress will be made during the current quarter. After equipping No. 3 shaft with guide ropes and cages, good progress was made with development. The results for the quarter are as follows: The 8th level drive south was driven a total of 174 feet, of which 105 feet disclosed reef averaging 23 inches in width and assaying 12.1 dwts., or 277 inch dwts. In addition 343 feet of cross-cutting was done on this level, and since the close of the quarter the reef has been found on the north side of the dyke in which the shaft was sunk. The total footage of development at this shaft was 517 feet for the quarter and 798 feet to date, of which 624 feet consisted of drives and cross-cuts in dyke. The white labour strength averaged 178 men, and the average number of natives employed was 896. The loan account with the Central Mining and Investment Corporation, Ltd., at March 31, 1919, amounted to £100,000. The expenditure for the quarter amounted to £70,587.

New Patents.

- Frederick Edmund Berry.—Improvements in or relating to electric transformers for regulating or varying the voltage of currents supplied therefrom.
- R. Pearson and Howard Childs Parkes.—Fixation of nitrogen of the atmosphere.
- Fabian Mercer Cox.—Improved air lock caisson.
- Gustavus Adolphus Sheeley.—Improvements in lining for tube mills and the like.
- Philip Henry Parr Monckton.—An electrical sample drying apparatus (heat). Improvements in treating gold amalgam.
- George Muirhead Clark.—A new and improved adaptation of a slide rule in combination with thermometrical instruments.
- Emile Augustin Barbet.—Improved process and apparatus for the treatment of pyroligneous liquids derived from the carbonisation.
- Eric Keightly Rideal and Hugh Stott.—Improved apparatus for indicating and/or recording quantities of carbon monoxide in hydrogen or gases containing the same; applicable also for like purposes.
- Marconi's Wireless Telegraph Co., Ltd.—Improvements in reflectors for use in wireless telephony and telegraphy. Improvements in wireless telegraphy transmitters. Improvements in receivers for wireless telegraphy.
- Theunis Johannes Naude.—Improvements in plugs (two, three or more way) for telephones.
- Arthur George Chick.—Improved buffer and coupling with coupling apparatus.
- Tom Dawson and Frank Ondra.—Improvements in rock drill mountings.

LATEST REPORTS FROM THE "GOLDFIELDS" GROUP.

SIMMER AND JACK.

The following is a summary of the operations of this company for the quarter ended 31st March, 1919: The development footage accomplished during the quarter amounted to 1,963 feet, the footage sampled being as follows: Main Reef, 526 ft., width 28 ins., value 8.0 dwts.; Main Reef Leader, 33 ft., width 13 ins., value 4.3 dwts.; South Reef, 143 ft., width 29 ins., value 7.1 dwts. Tons milled, 125,900; working profit (including sundry revenue), £8,256, less, however, £2,286 appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc.; gold in reserve, £1,250. Shortage of native labour continued during the quarter, with consequent adverse effects upon mining operations. Influenza having abated in Portuguese East Africa, recruiting there has been re-started. An improvement has taken place in the numbers of natives coming from British South African territories, and recently the native labour position generally has somewhat improved, which, if continued, should gradually improve results from operations.

ROBINSON DEEP.

The following is a summary of the operations of this company for the quarter ended 31st March, 1919: The development footage accomplished during the quarter amounted to 982 feet, the footage sampled being as follows: Main Reef, 101 ft., width 12 ins., value 7.1 dwts.; Main Reef Leader, 227 ft., width 25 ins., value 22.7 dwts.; South Reef, 53 ft., width 27 ins., value 17.6 dwts. Tons milled, 115,400; loss on working (including sundry revenue), £3,074; appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, Government taxation, etc., including also interest on joint loans from the guarantors, amounted to £8,323; gold in reserve, nil. During the quarter this mine suffered from shortage of native labour, and operations were much disturbed through the total closing down of No. 1 shaft for repairs from the 21st January to 7th April, resulting in somewhat lower tonnage milled, consequently, despite improvement in grade, and slightly lower working costs there was a small loss for the quarter. Shortage of native labour continued during the quarter with consequent adverse effects upon mining operations. Influenza having abated in Portuguese East Africa recruiting there has been re-started. An improvement has taken place in the numbers of natives coming from British South African territories, and recently the native labour position generally has somewhat improved, which, if continued, should gradually improve results from operations.

SIMMER DEEP.

The following is a summary of the operations of this company for the quarter ended 31st March, 1919: The development footage accomplished during the quarter amounted to 1,164 feet, the footage sampled being as follows: Main Reef, 602 ft., width 37 ins., value 8.5 dwts.; Main Reef Leader, 185 ft., width 29 ins., value 8.0 dwts.; South Reef, 220 ft., width 37 ins., value 12.2 dwts. Tons milled, 121,800; loss on working (including sundry revenue), £10,517; appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, interest on debentures, debenture guarantors' remuneration, debenture trustees' fees, etc., amounted to £11,265; gold in reserve, nil. This mine suffered severely through continued shortage of native labour, having only 57 per cent. of its underground complement at the end of March, in addition to which the abnormal working loss of £7,900 for the month of March due to accidents and water troubles in Milner shaft resulted in reduction of high grade ore tonnage to the mill from the lower levels of that section. Normal conditions have since been resumed there, but the native labour position is still very unsatisfactory. Shortage of native labour continued during

the quarter with consequent adverse effects upon mining operations. Influenza having abated in Portuguese East Africa recruiting there has been re-started. An improvement has taken place in the numbers of natives coming from British South African territories, and recently the native labour position generally has somewhat improved, which, if continued, should gradually improve results from operations.

THE JUPITER.

The following is a summary of the operations of this company for the quarter ended 31st March, 1919: The development footage accomplished during the quarter amounted to 1,051 feet, the footage sampled being as follows: Main Reef, 514 ft., width 38 ins., value 10.1 dwts.; Main Reef Leader, 132 ft., width 18 ins., value 13.6 dwts.; South Reef, 83 ft., width 26 ins., value 13.2 dwts. Tons milled, 72,900; loss on working (including sundry revenue), £2,232; appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc., amounted to £1,241; gold in reserve, nil. The improvement in tonnage milled and in working costs was unfortunately discounted by a drop in grade. Shortage of native labour continued during the quarter with consequent adverse effects upon mining operations. Influenza having abated in Portuguese East Africa, recruiting there has been re-started. An improvement has taken place in the numbers of natives coming from British South African territories, and recently the native labour position generally has somewhat improved, which, if continued, should gradually improve results from operations.

SUB NIGEL.

The following is a summary of the operations of this company for the quarter ended 31st March, 1919: The development footage accomplished during the quarter amounted to 2,762 feet, of which a distance of 2,125 feet was advanced on reef; 2,125 feet were sampled, of which 570 feet gave 10.0 dwts. over a stoping width of 42 inches, whilst the average of the balance of footage sampled was not within the pay limit. Tons milled, 27,000; working profit (including sundry revenue), £21,145, less, however, £3,436 appropriated during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc.; gold in reserve, £12,125. The reduced profit is due to decrease in tonnage and higher working costs, the latter being largely the result of an increase in the rate of development, which must be continued. As was forecasted in the last quarterly report the percentage of payable development remains low, and no marked improvement may be looked for during the current year. A new pay chute encountered on the 15th level east (B shaft section) was advanced on for a distance of 80 feet, the reef averaging 8.5 dwts. per ton over a stoping width of 42 inches. Driving on payable reef is being continued here. The new shaft which at the end of the quarter had reached a vertical depth of 1,431 feet intersected a dyke 450 feet wide. Shortage of native labour continued during the quarter with consequent adverse effects upon mining operations. Influenza having abated in Portuguese East Africa, recruiting there has been re-started. An improvement has taken place in the numbers of natives coming from British South African territories, and recently the native labour position generally has somewhat improved, which, if continued, should gradually improve results from operations.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Cement-Gun.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—In regard to Mr. Hosking-Ivey's inquiry in your issue of the 10th instant, in regard to the above, I beg to give you the following information: The brattices at the Modder East Mine were constructed in the following manner: Ordinary gum poles 3in. to 4in. diameter were spaced 10ft. to 12ft. apart, and securely wedged in place. Chicken netting is stretched between these poles, to form the reinforcement in the gunite. All posts are put up the same centre distance so as to use a standard length of panel for shooting gunite against. Irregularities between top and bottom of panel and rock are taken care of by means of sacking or pieces of old belting. The rebound of the gunite throws the chicken netting practically into the centre of the completed gunite slab, and as the gum poles are completely encased, they are protected by the gunite against decay. The height of the brattice is 7ft. to 8ft. and it is about 3in. thick. The advantages of gunite as compared with brick brattices are as follows: The gunite brattice costs about 10s. per running foot, as against about 40s. for brick, and the gunite makes an absolutely air-tight joint top and bottom. The gunite

brattice can be carried close to the working face, and it is absolutely air-tight, to insure good ventilation in the case of long drives, such as are used in the mines of the Far East Rand, whereas it is impossible to carry brick brattices close to the face on account of the effect of the blast on brickwork.

In connection with coal mining, the gun has been extensively used in America and Canada. At the Dominion Coal Company, they had considerable trouble with stone stoppings not being air tight, and they gave the stoppings a coating of 2 in. to 2½ in. gunite, with the result that the trouble was entirely overcome. The machine is also largely used in the coal mines to prevent the disintegration of slaty roofs in the main drives which were affected by exposure to air.

Mr. G. S. Rice, Chief Mining Engineer for the United States Bureau of Mines, made extensive trials at the Bureau's experimental mine, and it was found that the gunite coating was very successful in preventing weathering, and that the gunite was not very much affected by their explosion experiments, of which they conducted over 300. The bureau reported that the cost per square yard of coating 378ft. of entry an average thickness of ¾ in. to 1 in. was 1s. 6d.—1 am, etc.,

HERBERT AINSWORTH.

Per EFW. S. BATEMAN.

South African Gold Trust.

At the recent meeting of the South African Gold Trust, Ltd., Lord Harris delivered a speech which in several aspects was of as much interest to the investing public generally as to the particular shareholders he was addressing. Perhaps his most important remarks were a valuable contribution towards a solution of the present labour friction. He said that the Trust had arrived at an agreement with its employees by which, in addition to a guaranteed minimum based on pre-war salaries, fluctuating bonuses are paid calculated according to Sauerbeek's figures of the prices of commodities. Lord Harris gave it as his opinion that "if wages generally throughout the country had been based on some agreed proportion having close relation to the index figures, there is a possibility that unrest would not have been as severe as it has been." The chairman also dealt in suggestive fashion with the report of the Incheape Committee on Gold Production, while as regards the Trust's own future he expressed the view that shareholders might regard prospects hopefully. "Investments are distributed over a very wide field; the large proportion of them are interest-bearing, and in each quarter of the globe in which the company is interested in operations there is a comfortable appreciation over depreciation."

Union Tin: First Shipment.

The acting secretary of the Union Tin Mines writes that the first shipment of tin concentrates produced by the company is now being loaded per s.s. "Wakasa Maru," which arrived at Durban on the 12th instant. The assays made by the Standard Bank of S.A., Ltd., of the two portions of the shipment give the following returns: 62.2 per cent. and 71.5 per cent. metallic tin, which are regarded as highly satisfactory results in view of the fact that the plant is not yet complete. The work of constructing the pipe line from the river is practically complete, and production will be resumed within a month from date.

The Minerals of S.W. Africa.

In another part of this issue will be found an article taken from the official organ of the Board of Trade, dealing with the mineral resources of South West Africa. We have reason to know that the facts and figures given are the result of very careful official research work, and that they can be relied upon in every particular. They were, as a fact, among the economic data regarding the Protectorate which were laid before the Peace Conference; and they form the best available summary of the mineral resources of the latest addition, under the mandatory principle, to the Union.

Good Hope Tin Mines, Ltd.

The third annual general meeting of shareholders of the Good Hope Tin Mines, Ltd., was held at Capetown last week. The chairman, Mr. John St. Leger, in his address, emphasised the advantages gained during the year under review from the additional plant erected, proving conclusively, he said, that the output had been doubled and the concentrates won bore practically the same ratio, while the cost per ton of ore treated had been reduced from 13.80 shillings to 6.64 shillings per ton. The excellent result obtained during the year was more gratifying because of the abnormal difficulties experienced, which included a shortage of water, the loss of time occasioned by the erection of new plant, and the influenza epidemic. The confidence of the directors in the intrinsic value of the property had been more than justified by the result of a visit by one of the leading mining engineers of the Transvaal, who visited the mine and carefully sampled the lode, the results being 2 per cent. pure tin, over a stopping width of 36 inches. The stopping width of 36 inches represented a comfortable width of working face. The value per ton represented as per market value to-day (£200 per ton) 80s. per cubic yard. This, compared with a working cost of 22s. per ton, which included everything to the finished point, left a margin of profit amounting to 58s.

ENGINEERING SECTION.

WATER POWER IN SOUTH AFRICA.

Need for a Thorough Hydrographical Survey.

THE Preliminary Report of the Water-Power Committee of the Conjoint Board of Scientific Societies on the subject of water power in the British Empire, has the following reference to South Africa:—The committee has not as yet been able to elicit any definite information regarding the Union of South Africa. The Government of the Union have recently instituted a board of enquiry to consider the potential resources of the country, and among the questions to be investigated is that of the utilisation and conservation of water power. Owing to the seasonal character of the rainfall throughout South Africa, the flow of the rivers either is greatly diminished or entirely ceases during a considerable period in each year, and their value as sources of power is correspondingly diminished. It is, however, known that a number of important falls occur, particularly on the eastern slopes of the Drakensberg Range, some of which are perennial and capable of development. Some energy may also be developed on the Vaal and Orange rivers and the Mooi River of Natal and the Transvaal.

Rhodesia.—In Rhodesia the rivers capable of developing large powers are in general very remote from present centres of industry, and few powers have as yet been developed. There are three great river systems in Southern Rhodesia—the Zambesi, the Sabi, and the Limpopo. Of these, the Zambesi is the more important, and at the Victoria Falls alone offers a potential power of something like 750,000 horse-power. At the Kariba and Mapata Gorges the river offers further possibilities, and units of 5,000 to 10,000 horse-power could probably be installed. Of the rivers in the Zambesi system, only the Hunyani, Ruia, Mazoe, Inyagui, and Nyagadzi offer any possibilities of power. The Hunyani cannot be relied upon for uniform flows of any magnitude. The other rivers of this system have a more or less uniform flow. It is worthy of note that in this region not only does the uniformity of flow increase, but also in rivers of equal catchments the percentage of run-off increases as their directions bear round from west to east. The Limpopo and its feeders offer practically no possibilities, owing to the great variability of flow, the flatness of the gradients, the sandy nature of the bed and banks, and the large amount of silt carried in suspension. The Sabi River system offers greater possibilities. Its feeders have a fairly uniform supply and steep gradients with occasional falls, and it is estimated that it should be possible to develop some 90,000 horse-power

from this system. Assuming that 10 per cent. of the total power of the Victoria Falls can be usefully developed, the resources of Southern Rhodesia total about 220,000 e.h.p., made up as shown in the table. Large areas in the neighbourhood of the Sabi Rivers consist of rich alluvial plateau land, which only requires irrigation to render it capable of bearing ample crops of sugar, cotton, rubber, etc., and as water is plentiful and only requires pumping, there would appear to be an immediate use for any such power as could be developed in the irrigation and agricultural development of the region. The success of such a scheme would, however, depend on facilities for economical transport to Beira or the Union. The district is, moreover, rich in deposits of coal, copper, and other minerals, which are at present not developed owing to the large cost of power and the lack of transport facilities. The possibilities are sufficiently promising to warrant a thorough hydrographical survey being carried out.

	E.H.P.
Victoria Falls	75,000
Kariba Gorge	10,000
Mapata	10,000
Ruia River	5,000
Mazoe River	5,000
Inyagui	5,000
Nyagadzi	5,000
Sabi System	91,000
Plateau	13,000
Total	219,000

Amongst the recent orders secured by the English Electric Company—in which, it will be remembered, are now consolidated the various interests of the Coventry Ordnance, Diek, Kerr, Phoenix Dynamo, United Electric Car and Wilkins & Robinson companies—is one from the Huddersfield Corporation for a 5,000 k.w. turbo-alternator set, speed 3,000 r.p.m., and another from the Nottingham Corporation for a similar turbo-alternator set of 3,000 k.w. output, together with surface condensing plant and cooling tower; the contract also includes the supply of rotary converters and an equipment of Ferguson superheaters to existing Lancashire boilers to secure economies in steam consumption with the new turbine. This plant will be installed in the two Nottingham power stations together with interconnecting E.H.T. switchgear and transformers.

The Divining Rod.

The Society of Natural Sciences, of Wageningen, Holland, some time ago organised experiments in order to test the value of the divining rod. The results which have now come to our notice show that four diviners took part in the tests, which consisted (1) of tracing underground streams and controlling their courses in a given plot; (2) of determining whether underground conduits were full of water or dry. In many cases it was probable, and in some cases certain, that the rod did react to some apparently existent conditions. This shows that the apparent success of diviners is due to superficial control, conscious or unconscious, and to their observation and experience of the ground. Completely unfavourable results were obtained in searching for predetermined water currents; correct answers were obtained in 23 cases, and wrong ones in 25. The results of the experiments were, therefore, in opposition to the claims of the diviners.

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HAMMER DRILLS—THEIR HISTORY, DESIGN AND OPERATION.—I

[By HENRY S. POTTER.]*

THE subject of this paper is one which has come very much to the forefront during the last few years, and more so in the last twelve months due to the shortage of native labour and the necessity of finding some device to increase the efficiency of the ordinary hammer boy. A good deal of time and money have been spent by the mining industry on this subject, especially in the Stope Drill Competition of 1909. From the results of these tests, which spread over a period of twelve months, the hammer drill did not show up to great advantage; the prizes being, as is well known, awarded to light weight reciprocating machines; which were similar in design to machines which had already been installed on the mines of the Witwatersrand. It is very difficult in a paper such as this to go into too much detail with regard to the machines which have been evolved during the last fifteen to twenty years. I have, therefore, prepared for illustrating this paper, a series of lantern slides which illustrate some of the more prominent machines on which most of the successful modern Hammer Drills are based in one or more details of their design. The majority of the machines illustrated are those which have actually been made, and in many cases I have been personally acquainted with the machines and the men who designed them. I have also included in connection with this paper a few blocks illustrating some of the more important machines which are being used on the Witwatersrand and other mining fields. I will now proceed to show some of the earlier types of machines and propose, with your indulgence, to point out their leading features.

It will be noted that most of the remarks in this paper refer to what is popularly called the Jack Hammer type, but many of these remarks apply with equal force to the Air Feed type. While on this question of name, it is rather difficult to understand how the name Jack Hammer arose, personally I think "Rotator Hammer Drill" would be better, using the prefix "Auto" or "Hand" to designate the type.

Slides Nos. 1, 2, 3, 4, 5 and 6 illustrate some of the earlier types of Hammer Drills. Slides 12 and 13 illustrate two Pneumatic Hammers, which are the pioneers of their types, and on which some of the Air-Feed Hand Rotation Drills are based. Slides Nos. 7, 8, 9, 10 and 11 illustrate the modern type of Jack Hammer, also Figures A, B, C, D, E and F in the text. Slides Nos. 7, 8, 9, 10, 11, 14, 19, 20 and 21, also 22, 23, 24, 36 and 37 illustrate types of Rotation Devices. Slides Nos. 19, 24, 25, 26, 27, 28, 29, 30, 33, 34, 35 and 36 illustrate various types of Water Devices. Slide 31—Suction Dust Device. Slides Nos. 37, 38, 39 and 40 illustrate Bars and Rigs. Slides Nos. 41 and 42 illustrate two drill testing machines. Slide 43—Electric Furnace. Slides Nos. 44 and 45—Deealescent set and diagram. Slide 47—Jenkin's Detachable Bit and Shanks. Slides Nos. 48 and 49—The Blackett Rotary Drill. Figs. G, H, I—Air-feed Machines. Figs. J, K, L, M—Cradle Machines. Figs. N and O—Drill supports.

The first machine, Slide 1, is a Portable Steam Riveter of J. M. Gray's of 1863. Its special features are that the piston has a long stroke, the shank of the snap forms the abutment-wall on which the steam reacts to return the piston, the valve being moved in one direction by means of the cam-shaped head of the piston contacting with a tappet which operates the valve by means of the extension rod which is shown; the valve being operated in the other direction by means of a port from the cylinder. Slide 2.—We come to one of the first Hammer Drills, i.e., the old Schmucker, consisting of a valveless hammer mounted on a screw feed cradle, the rotation being obtained in this model by means of a three-cylinder engine. It may interest members to know that one of these machines was installed on the Witwatersrand Deep, Ltd., the only difference being that instead of the motor being as illustrated it was of

the square piston type, similar to that used in the Duke engine. Slide 3 illustrates what is known as the New Schmucker, and represented a considerable step forward on the design as shown in Slide 2. The piston is of the valveless type, and the rotation is by means of a cross piston provided with a rack, engaging with a circular ratchet engaging a corresponding ratchet on the chuck, the cross piston operates by means of ports which take air from either end of the cylinder. A holding ratchet is fitted adapted to lock the chuck when the cross piston is making its idle stroke. For clearing the debris from the hole a tube was arranged to surround the steel which was generally of cruciform section. This was one bad feature of the machine, as after a time the tube concertinaed, and got very badly damaged and dented. I have seen one of these machines at the Robinson Deep. Slide 4.—Pierce, Treglown, 1902, represents a device which was got out primarily for drilling brick-work and concrete and consisted of fitting a rotation device on to a pneumatic chipping hammer, the

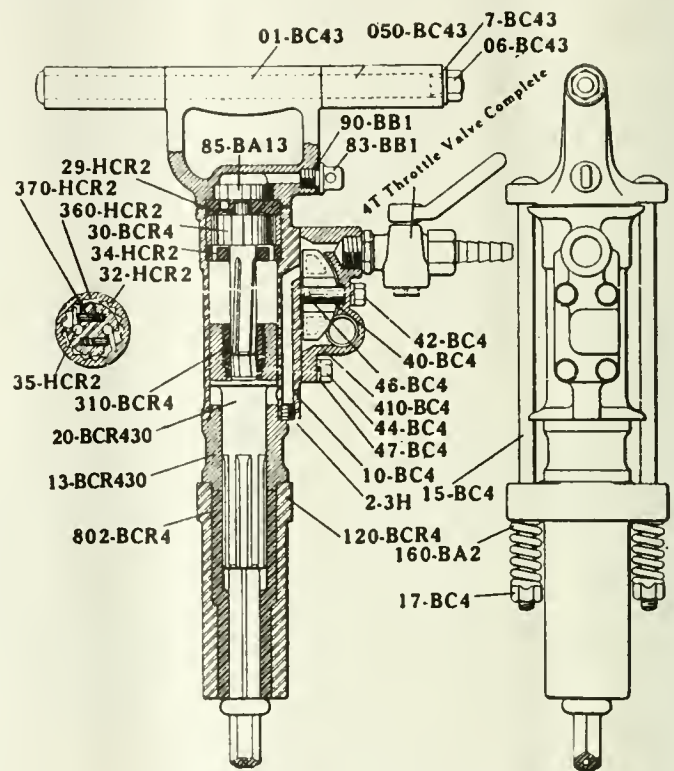


FIG. A.—INGERSOLL JACKHAMMER.

Characteristics: All-steel construction; Butterfly valve (i.e., one wing controls air, the other exhaust); adequate oiler capacity; exhaust control valve to increase blowing through steel; rifle bar mechanism for automatic rotation at rear end of cylinder; chuck fitted to take square shank hollow steel.

rotation being arranged by means of a device similar to a Root's Blower geared to the chuck by means of a worm and worm wheel, the rotation of the gears being obtained from the exhaust of the machine. A small relief valve was installed in the pipe connection so that the back pressure on the hammer should not be too excessive.

Slide 5 shows the Kimman Hammer Drill made about 1904. The device for removing debris from the hole was similar to that used on the New Schmucker, Slide 3. It will be noticed that the rotation and a good many features of its construction are similar to those used in the Jack Hammer as we now know it. The valve which is shown in large detail in the right hand corner of the slide was of the differential type and was built into a valve block interposed between the cylinder head and the ratchet gear, this being somewhat similar to the Sullivan. Several of these machines were sent to South Africa, but were never installed on the mines to my knowledge.

(To be continued.)

*Paper read before the South African Institution of Engineers.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

**Government Action in re Low Grade Mines—Iron, Steel and Machinery—Oils and Colours—
Timber and Building Materials—Second-hand Materials—Electrical Materials—
Trend of Business—Building Societies and Housing.**

THE letter of Sir Evelyn Wallers to the Government at Capetown and the reply thereto have been the chief subject of conversation in mining and other circles. At a second-hand mining material sale on Tuesday the proprietor was sadly disappointed at the prices realised. These prices for second-hand machinery were 25 per cent. less than before the armistice. He was particularly asked the reason for such a drop. He replied that his sale clashed with another sale in town, but he attributed most of his bad luck to the published letters before referred to, as to the closing down of some of the lower-grade mines. The auctioneer, who did his very best, remarked that dealers were evidently not anxiously disposed to purchase big lots for stock purposes. A dealer in return remarked that when some of these mines closed down it was only natural that a lot of second-hand material and machinery will be transferred to other mines or put on the market. Hence the cause of the bad sale. In following up this matter with the mining material merchants, various opinions were expressed. Many people thought that there was a great deal of bluff in the President of the Chamber's letter, whilst others thought that a number of mines closing down would not interfere seriously with the prosperity of Johannesburg, as it was recognised by everyone that the Kaffirs could be placed on the producing mines, most of which were in want of extra natives. It may be that the Government is obsessed with the idea that Sir Evelyn Wallers may have exaggerated the case, as the reply of the Acting Premier is disappointing in the extreme. This is not a matter of yesterday, but during the past twelve months these notes have reiterated the subject over and over again. It may be a difficult problem to deal with, but this is all the more reason why the Government should have given it more attention, but so far it has been a policy of drift, both by the Imperial and our own Government. Unfortunately, the mining industry will receive little or no credit for having kept the lower-grade mines, which are working at a loss, open so long, because where one takes the mining people's part there are dozens who pooh-pooh the idea that anything good can come out of those connected with the Chamber of Mines. This is a pity, because the President of that body has done everything he possibly could both with the Labour Party and the Government to see what can be done to keep the whole industry going. How-

ever, it is to the credit of the Labour Party that their leaders have recognised the great fact that some of the mines are not paying and some assistance was required to help the lame ducks over the stile. But now we are faced with the prospect of unemployment from the white labourers' point of view, and naturally if several thousand men are out of work that would seriously interfere with the immediate surroundings, should the mines come to a standstill. Here we are with an industry paying directly and indirectly over 50 per cent. of the taxation of the country. Yet the Government think so little of the Witwatersrand that they propose practically nothing in the way of amelioration. The other side of the position is that mining merchants consider that the sooner drastic measures are taken to get rid of this bugbear of closing down the mines, which is overhanging business and enterprise, the better, as, coupled with the stagnation in the mining business and the non-signing of Peace, things are practically at a standstill, as now the mines are using almost solely from their reserves. What otherwise can be expected when these reserves are likely to be added to when a mine or mines in any particular group are closed down?

IRON, STEEL AND MACHINERY.

Business in all kinds of bar iron and mild steel of all sizes and kinds is continuing very good indeed, chiefly for outside mines, and particularly tin mines, which seem to be very much on the move if the orders are any indication. On Thursday orders for bar iron were sent to Capetown and Delagoa Bay, as well as many intermediate places, and during the week some engine tubes were sent to Sutherland, in the Cape Province, per passenger train. One of the partners of that firm remarked that this was an old customer, who thoroughly relied upon the work sent. He reckoned they had obtained this good name by taking off their coats and working themselves. This is the kind of thing that makes Johannesburg the great centre it is for all classes of engineering and machinery work. An interesting circular from the coast on the hardware trade happened to drop into our hands. It must be borne in mind that these are the cut prices of merchant to merchant and not from merchant to storekeepers. Canadian wire nails, f.o.r. Port Elizabeth, 1 in. x 15, 35s.; 1½ in. x 13, 34s.; 2 in. x 12, 33s. 6d.; 2½ in. x 11, 33s. per 100 lb. keg. Baling wire, 100 lb. coils, 14 gauge, 40s., f.o.r. Durban. Round iron, imported, ¾ in., 38s. per 100 lbs., f.o.r. Port Elizabeth. Triangular copper wire, 12 17 gauge, 1s. 10d. per lb., f.o.r. East London. American round mild steel bars, ¾ in. and 1 in., ¾ in. and 1 in., £30½ per ton, f.o.r. Capetown. Shovels and spades, No. 4 Bulldog brand, round nose, 7s. 6d. each; No. 4 T handle spade, 9s. 6d. each; round nose D handle shovels, 7s. 6d. each; No. 3 square nose shovels, 7s. 6d. each, f.o.r. Capetown. Picks, chisel and diamond point, 7 lb., 45s. per dozen; ditto, Capetown. Here in Johannesburg, steel rods, 6d. per lb.; and imported steel generally 45s. per 100 lbs.

OILS AND COLOURS.

The demand for all kinds of paints has been excellent since the building employees' strike was finished. According to a mid-monthly circular, the following are a few of the

Registered Trade Mark



‘RIVERSEA’ PAINT

The Best for Africa.

Quite different from all other paints, supplied in any ordinary colour. Elastic, Waterproof, impervious to heat, cold, and atmospheric conditions. A perfect preservative for Iron, Wood, Stone, &c. Salt Water has no effect, is a positive cure for damp, resists the action of strong acids. Can be submerged under water, and in use withstands very high temperatures of superheated steam.

Sole Manufacturers:
The GASSON COMPOSITIONS Co. Ltd.
Fulham, London, England.

THREE SEAS BRAND.

Johannesburg prices: White lead in oil, 9d. a lb. in 50 and 100 lb. kegs; 1s. a lb. for smaller quantities; ant-proof paints, 26s. 6d. per Imp. gall.; alum, 6d. per lb.; brushes, "Temper Idem" brand 8 oz., 25s.; 6 oz., 21s.; 4 oz., 17s. 6d.; distemper brush, finished grade bristle, 20s. each; camel hair flat brushes, 1 in., 1s. 6d.; 1½ in., 2s. 6d.; 2 in., 3s. 6d.; borax, 6d. per lb., 100 lb. bags; Bitsol varnish, 8s. 6d. per gall; chamois leathers, 6s., 7s. 6d. and 8s. 6d.; English creosote, 18s. per 4 Imp. galls; caustic soda, 2 lb., 4s. 6d.; 3 lb., 2s.; 5 lb., 2s. 9d.; best brands of disinfectants, 4 gall. drums, 34s.; dry colours, various, 32s. 6d. per 100 lb. box; glues, 1s. per lb.; cabinetmakers', 1s. 1d.; best Russian, 2s.; powdered glue size, 2s. 3d. per lb.; glasspaper, 42s. 6d. per ream, and 1s. 3d. per single dozen; oxide, dry, 14s. 6d. per 100 lbs., ½-ton lots; 12s. ton lots; pumice stone, lump, 1s. per lb.; 10d. per lb. in 100 lb. lots; powder, 9d. per lb, 7½d. lb. per 50 lb. bag; coal tar, 14s. per 4 Imp. gall. can; turps, 65s. a case 2-4's; 70s. a case per 10 tins; Varnishes, special copal, 15s. per gall; black Japan, 21s.; oak varnish, 15s. a tin; whiting, finest quality, 20s. per 100 lbs.; bees wax, 2s. per lb.; paraffin wax, 1s. per lb.; zinc, white, 2s. per lb, genuine English. Ample stocks are in hand, with an easier tendency in prices, as the coast people are continuously offering material. Plate and sheet glass are in abundance, without quotable alterations.

TIMBER AND BUILDING MATERIAL.

Business is quite fair, but not so active as anticipated, as there are not any entirely new contracts entered into, because builders are acting cautiously as they think the market is likely to fall. This is very questionable, as, according to the cables, it seems that the Baltic people are waiting to see what will happen when Peace is signed. In Johannesburg deals are 1s. 5½d. to 1s. 6½d.; flooring, 8½d.; ceiling, 6d.; and pitch pine, 10s. 6d. a cube. The price of ready-made doors is a trifle easier, but windows and all other building requirements are steady. Galvanised iron, 21 gauge, 1s. 3d. up to 10 ft.; and above, 1s. 3½d. to 1s. 4d.

SECOND-HAND MATERIAL.

There is still a very good demand for steam power from agriculturists, also for all kinds of agricultural implements and machinery, both second-hand and new. The coal mines of the Transvaal and Natal have also been good customers for pumping and various kinds of hauling and running gear. Several small batteries have been absorbed for the Northern Transvaal and Southern Rhodesia, as well as cranes and pumps for the tin and copper mines. There have been many inquiries for mine tramway material, but very few orders have been executed in consequence of the shortage of goods, especially for smaller rails. The building material yards have poor supplies after the activity experienced immediately after the builders' strike was finished. As previously remarked, values of second-hand mining goods had a nasty set-back, when the President of the Chamber of Mines' letter was published in reference to the closing down of the poorer-grade mines.

ELECTRICAL MATERIAL.

This market is unchanged. Builders complain of practically nothing doing; plenty of work is under contemplation, but as soon as prices are mentioned people are frightened, and jobs are not being undertaken; in consequence of which remarkably little is being done by contractors. Tubing is now coming in and prices are gradually receding, but not much at present of wiring; large stocks are on hand, and this is also cheapening. As a matter of fact builders have just started putting tubes in the walls and fitting up generally, and when once on the way a lot of material is required, and it is therefore expected that within a short time business generally in electrical goods will much improve. Country business is still going strong. Kimberley is remaining the chief buyer of stocks from Johannesburg, whence they can be imported cheaper than from along the coast.

TREND OF BUSINESS.

There are several adverse factors preventing anything like activity. The first being the signing of peace, which does not seem very near, as the provisional peace holidays in the United Kingdom have been arranged for August 3rd, 4th and 5th. The mines are purchasing very little, as they are using from reserves and only purchasing absolute necessities as the reserves become exhausted. It is fortunate that we have a large hinterland to supply, and that is getting more pronounced as the weeks roll by, as stocks are excellent in Johannesburg throughout the gamut of trading, and the news from overseas is that prices are rather on the increase than on the down grade, hence many commodities can be purchased as cheaply in Johannesburg as in London or New York. And another factor is that when the Parliaments (at Capetown and Pretoria) are in session it is never conducive to smooth business; as all manner of disturbing questions are brought up. The Provincial Council has turned down the Saturday half-holiday, which is a great relief to the Johannesburg shopkeepers, who have heavy establishment charges to meet. There is an idea that several of the big emporiums may close at half-past six on Saturday and let the smaller tradesmen supply the odds and ends after that.

BUILDING SOCIETIES AND HOUSING.

The United Society held its annual meeting on Wednesday evening, when it was reported that within a few months its assets would stand at £1,000,000, and seeing a 10 per cent. dividend was declared, the whole proceedings were very harmonious. A statement was made that the assets of building societies in the Transvaal alone amounted to £2,500,000. This was followed by a resolution urging the Government to introduce an Act to control building societies. The meeting also passed a resolution against the increase of the transfer duty on property in the Transvaal from 1 to 2 per cent. This was belated, as it would appear that the increase was passed in the Capetown Parliament simultaneously with the resolution referred to. There is plenty of money in Johannesburg, and prices of property are keeping up, chiefly because of the extraordinary demand for houses, flats and rooms especially in town or within easy train distance. We do not seem singular in the scarcity of houses, as throughout the British Empire similar conditions prevail. Naturally the population increased throughout the war period and buildings were decidedly checked in their erection in consequence of the workers being at the front.

VARIOUS COMMERCIAL NOTES.

The British Government has given £500,000 of railway material (ex-war) to the Union Government, for which we ought all to be grateful. Several strong speeches have been made in the Cape Parliament that mining of all kinds should only be taxed by the National Parliament and not by Provincial Councils. The big question is now being discussed, of trading on mines, principally for kaffirs, by introducing the co-operative system.

Cement Gun.—A letter will be found from Mr. Herbert Ainsworth, in reply to Mr. Hosking-Ivey's inquiry, in a separate column of this issue.

Imperial Mineral Resources Bureau.

The *London Gazette* contains notice that a petition of Sir Richard Redmayne, K.C.B., and others, praying for the grant of a Royal Charter incorporating "The Imperial Mineral Resources Bureau" has been presented to His Majesty in Council, and that His Majesty has been pleased to refer the said petition to a Committee of the Lords of the Council.

WANTED.—Good Second-hand Morris Slimes Pump, 3in. or 4in.; and good Second-hand 2in. or 3in. Tangye Centrifugal Solution Pump.

Details to "PUMPS," c/o Mining Journal, Box 963, Johannesburg.

The Week's Meetings.

VEREENIGING ESTATES.

The twentieth ordinary general meeting of the shareholders of the Vereeniging Estates, Ltd., was held at 10 o'clock on Saturday, May 17, in the board room. Lewis and Marks Buildings. Mr. Samuel Marks presided, and there were also present or represented by proxy:—Messrs. Isaac Lewis, Barnett Lewis, George Ayling, George Falcke, R. W. Townsend, Alfred Hird, Julius Weil, C. B. Kingston, C. F. Rowsell, Louis Marks, the African and European Investment Company, Ltd., H. J. Dowdall, L. H. Lavenstein, M. D. Harrison, P. Weeks and William Mallinson (secretary). In all 404,548 were represented out of an issued capital of 730,580 shares.

The chairman declared the meeting duly constituted, and the secretary read the notice convening the meeting.

The minutes of the nineteenth ordinary general meeting of shareholders, held on the 15th June, 1918, were taken as read, confirmed and signed.

The secretary read the auditors' certificate as shown on the accounts submitted.

The chairman, in moving that the directors' report and accounts for the year ended 31st December, 1918, be adopted, said:—

Gentlemen.—I regret that Mr. Isaac Lewis, your chairman and managing director, is not here to preside to-day. Mr. Lewis sailed for England last week on important business, and hopes to return in a few months. I take this opportunity of recording the good work done by Mr. Lewis in your interests during the past 2½ years, and which is reflected in the improved position of the company. The report of the directors and the audited statements of account for the year ended 31st December, 1918, are before you, and I propose they be taken as read. You will see from the accounts that the gross profit for the year amounted to £39,414 6s. 8d., as compared with £45,324 2s. 4d. for the preceding year, and £16,828 17s. 11d. for the year 1916. The reduced profit for the year 1918 as compared with 1917 was principally due to the poor mealie crop and the losses among our sheep caused by the abnormal rains of the year 1918. The profit of £11,934 12s. 4d. on farming operations was largely due to the increases in our herds of cattle. A study of the balance sheet, will, I think, give you a better idea of the improved position of the company than anything I can tell you. I will, however, draw your attention to a few points. At 31st December, 1917, the overdraft at the company's bankers was £6,184 10s. 7d., and an amount of £745 11s. 10d. stood at the company's credit on current account. At 31st December, 1918, the overdraft had been wiped out, and an amount of £18,634 17s. 1d. was debiting to the company's credit. The debit balance to profit and loss account at 31st December, 1917, of £22,758 1s. 11d. has disappeared, and for the first time for many years the balance sheet shows this account in credit, and to the amount of £9,359 6s. 6d. At the last general meeting of shareholders the chairman referred to the payment of a dividend, and I think I can safely promise you that a dividend will be paid before our next annual meeting.

Farming Operations.

Although, as before mentioned, the farming accounts for the year under review show a reduction in profit, as compared with the previous year, the future prospects of this department of your company's operations are most encouraging. The reduced profits in mealie growing and sheep farming were entirely due to abnormal conditions. During the four months ended April of this year, six inches of rain fell, which is about the average for that period, whereas for the corresponding period of last year 20½ inches of rain fell, with disastrous results to many farmers. I am pleased to be able to tell you the current year's mealie crop promises to be a very heavy one. The season is sufficiently advanced for me to say that the crop would show a substantial profit. Reaping and threshing are now in full swing. The sheep are in excellent condition, and have quite recovered from last year's exceptionally heavy rainfall. Five thousand full-grown ewes were put to the rams in April, and a good lambing in October next is practically assured. The rams were all selected and mated with ewes which suited them, the principle adopted here being to mate strong with strong and medium with fine, with the object of eventually getting all strong wool. It has been found that Schnapplaats, our sheep district, is more suitable for the robust staple than for the delicate fine staple, though perhaps wool buyers prefer the latter. It is obvious that while we must study the buyer to a certain extent, we must also produce what pays us best. The clip of wool shorn in January showed a marked improvement on anything we have produced here previously, and the brokers remarks on the quality and classification of the clip were very satisfactory, and reflect great credit on Mr. Hoford, the flockmaster. The lambs reared this season are the best we have had; they are well grown, in excellent health, and show considerable breeding. There was a great future for merino sheep in South Africa. The large farmers and station owners in Australia are cutting up their properties for closer settlement and the smaller farmer is not going in for the merino, with the result that merino sheep have been on the decrease in Australia for a number of years and ultimately South Africa will be called upon to produce the major portion of the merino wool used in the world.

Cattle and the Land.

One of the most gratifying of the company's operations last year is the cattle ranching. For some years the directors have been purchasing both here and in England bulls of the purest and best blood obtainable. The improvement in the herds is very noticeable each year and more than justified the trouble and expense incurred in the purchase of these animals. The bulls used were Hereford, Sussex, Shorthorn and Friesland. The increase in cattle last year constitutes a record both as regards numbers and improvement in quality and stamina. The horses are doing well. The first half-dozen mule foals were dropped last October, and promise to

be valuable animals. It is expected that this year about 25 mule foals and 35 horse foals will be dropped.

Maccavlei Forest and Orchards.

As you will have seen from the report of the directors, the past year was again a most favourable one for the forests. The climatic conditions were almost perfect for tree growth.

The railway track through the forest which I informed you last year was about to be laid, is now completed. This track connects the forests, orchards, fruit packing houses, etc., with the company's private siding on the main line between Viljoen's Drift and Vereeniging.

It is interesting to note that the steel trollies for use on the Forest Railway were made at the local works of the Union Steel Corporation, and will compare favourably with similar trucks made anywhere. An electrically driven sawmill is about to be erected adjacent to the private siding. As soon as the mill is completed the cutting of timber on a commercial scale will be commenced. I would like you to reflect for a moment what this forest asset means to the present shareholders. For the past twenty-four years the Company had been planting trees, maintaining and protecting them against fire and insect pests. To-day the trees consisting chiefly of pine, eucalyptus and oak number over 4½ millions. Only the actual cost of planting and maintaining the trees has been charged to capital account and even this amount has been reduced by the sum realised from the sale of thinnings, although the thinning increased instead of reduced the value of the forest. The policy of your directors is to maintain this asset. As each block is felled it will be replaced by the planting of a similar number of young trees. You will, therefore, see that this will not thus be a diminishing asset, but a constant source of income. A reference to the balance sheet will show that the trees stand in the books at the figure of £56,200 19s. 8d., or an average roughly of 3d. per tree. Shareholders can draw their own conclusions as to the profit that would accrue to the Company when this timber was placed on the market.

The apple crop this year has eclipsed all previous records, both as regards quality and quantity. Although only just over half of the 8,000 trees in the orchards are in full bearing the crop has realised £5,054 17s. 3d. The demand for our apples this year was so great that the whole crop was sold during the two months of March and April. The above figure of sales for the current year compare with £1,783 3s. 11d. for the year 1918, and £2,650 7s. 6d. for the year 1917. Special care and attention is paid to the spraying of the trees for the control of the forest insect pests and fungoid diseases. This spraying is done by petrol driven pumps.

The very fine quality of the "Maccavlei" apples is due to the suitability of the soil and the constant care and attention given to the trees.

Cornelia Colliery produced an output of 581,296 Sales tons during the year 1918 with a profit of £36,657 8s. 8d. This output is a decrease of nearly 2 per cent. on the record output of 592,413 Sales tons produced in the year 1917, but this slight reduction is

amply accounted for by the serious floods which occurred in the early months of the year, by the persistently poor physique of the natives recruited by the Witwatersrand Native Labour Association in Portuguese Territory due probably to the extensive use of the more able-bodied natives as carriers in the Portuguese military operations in East Africa, and more particularly by the epidemic of Influenza which swept through the Colliery in the month of October affecting 60 Europeans out of a total of 106 and 1,594 Natives out of a total of 1,614 and unfortunately caused the deaths of 1 European and 37 Natives and loss of over 14,000 shifts work. Considering all the circumstances it is not surprising that the output showed a reduction of nearly 2 per cent. on that of the preceding year—it is the first halt in the series of record outputs produced annually since the year 1912:—Sales tons: 1912, 296,706; 1913, 338,321; 1914, 445,496; 1915, 508,428; 1916, 538,363; 1917, 592,413; 1918, 581,296.

The output for the four months of the current year totalled 199,637 Sales tons and, although the difficulties with both European and Native labour and the shortage in supply of underground natives with their poor physique are somewhat unsettling, the directors confidently anticipate another record for 1919.

The working costs for the year were seriously affected by the influenza epidemic which alone cost upwards of £4,000, by the very high prices for stores occasioned by war conditions, as also by the increase in war bonuses, dependents' war allowances, and holiday bonuses. The increase in working cost for the year 1918, being 12½ per cent. above the year 1917—but as the price per ton realised for the year 1918 was about 10 per cent. higher than for 1917, the profit for the year was £36,657 8s. 8d., as compared with £37,227 15s. 11d. for the preceding year.

The technical details of the colliery are fully dealt with in the general manager's annual report, of which you have had a copy, but I must refer to an outstanding feature of the year 1918 in the reduction of water to be dealt with, resulting from the success in damming off large outbursts of water underground. In common with most other mines, the phenomenal heavy rains from October to March, 1918, caused a serious increase in the volume of water to be dealt with underground, but at Cornelia this was unfortunately accentuated by an outburst of water of about 1,000,000 gallons per day in a tunnel being driven through a Dolomite concretion, and the combined volumes severely taxed the full capacity of the boilers and electric generating plants and kept all the underground pumping plants working at full pressure; the total volume of water pumped to the surface being about 3,000,000 gallons per day. As the 1,000,000 gallons per day outburst of water from the tunnel showed no signs of abating, a brick and concrete bulk-head was built during the months of June and July to dam off the outburst and this was completely successful in confining the whole of that water and thus reduced the total volume of water to be dealt with underground to about 2,000,000 gallons per day. Further experiments also successfully sealed off 500,000 gallons of water per day in abandoned workings and reduced the total volume to about 1,500,000 gallons per day and I am glad to be able to inform the shareholders that this position continues up to-day. The 1,500,000 gallons sealed off (amounting

to 7,500 tons weight of water per day) has halved the volume to be dealt with in the underground workings of the colliery, and this great saving has materially reduced the load on the boilers and power plants and the strain on the colliery staff—the colliery has again an ample reserve of steam and electric power and pumping capacity, there being now a greater margin than ever previously.

The mining conditions remain much as in previous years—the thickness of the seam and quality of the coal being maintained. The new district opened out on the Eastern side of the South African Main-line in the Maccaulei coal-field has been extended, and is now producing 20,000 tons per month of good quality coal with a higher calorific value than any other portion of the mine.

The new plant for screening, cleaning and sizing coal to coal merchants is working very satisfactorily, and during the year a duplicate coal-crushing plant was erected at the colliery by the Victoria Falls and Transvaal Power Company as a reserve for larger supplies; additions are also being made to the railway sidings to facilitate the working of the traffic and to minimise the duration of stoppages arising from shortage of railway wagons.

The extended accommodation needed for the increased staff of Europeans has been partly met by the erection of five substantial brick houses with tiled roofs for European married quarters, and twenty Ferro-concrete rondavels for European single quarters; the old back-to-back single quarters have been converted into three European married quarters which still further improves the married accommodation. The recreation hall was enlarged by the addition of a billiard room and a bioscope equipment has been provided. These extensions and additions been added materially to the welfare of the staff and workmen, and are much appreciated. The new native compound built in 1914 is being enlarged to accommodate an additional 250 natives, and the native hospital accommodation is also being extended.

The whole of the machinery and plant, surface and underground, is being maintained in good working condition and this colliery is now one of the largest and best equipped Coal Mines in the Union of South Africa, being capable of an output of 600,000 Sales tons per annum with a practically unlimited coal-field.

Camp Colliery, the new Colliery opened on the Transvaal side of the River Vaal and which was stopped after the war began and before Cornelia was found to be capable of dealing with any output likely to be immediately required, has been maintained in good working condition and the underground workings are being kept free from water ready for starting up whenever trade conditions justify the expenditure on the railway siding, screening plant, workshops, etc., required to complete the equipment.

Subsidiary Interests.

The Vereeniging Brick and Tile Company, Ltd.—This subsidiary company continues to make steady profits. During the year under review, it reduced its indebtedness to the parent company by £1,918 17s. 4d. The works are being extended to supply the increased demand for all its products especially roofing tiles, silica and magnesite bricks.

Vereeniging Township. — During the year under review the company

disposed of 16 erven at satisfactory prices. Despite the high cost of material, due to the war, a number of buildings were erected in the townships. The Vereeniging Milling Company, Ltd., is extending its buildings by erection of a new mill which, with offices, directors' house and staff quarters will cost approximately £25,000. This mill is being fitted with the latest improvements, including silos, grain elevators, etc. But for the unfortunate building strike just ended, the mill would have been completed and in full swing by now. The new public buildings, consisting of a court house, pass office, post office, etc., are practically completed. The erection of the wagon bridge over the Vaal River is nearing completion, and it is hoped that this will be opened for traffic within the next twelve months. The Standard Bank of South Africa, Limited, has decided to put up a substantial building at Vereeniging, rendered necessary by its increasing business.

Considerable progress has been made with the Rand Water Board Barrage, which, when completed in two years' time, will make the Vaal River and its tributaries navigable for 42 miles. The company is the owner of over 50 miles of water frontage in this area. The value of this land for agricultural and industrial purposes can hardly be overestimated. In this connection I cannot do better than quote the evidence given on the 13th February, 1919, by Sir Robert Kotze, Government Mining Engineer of the Union of South Africa, before the Select Committee on the Rand Mines Power Supply Company, Water Supply Bill. Sir Robert said: "In my opinion, the site of Vereeniging is, if not the finest, one of the finest in South Africa for industrial purposes, largely on account of the combination of water—if reasonable facilities are granted for the use of that water for industrial purposes—with coal, and in further combination with a healthy climate on the high veld. The three form an admirable combination for the establishment of industries in the neighbourhood of Vereeniging."

The Union Steel Corporation (of South Africa), Ltd., in which your company is interested, had a most successful year. The works of this Corporation are being continually enlarged to cope with the increasing demand for its products. The benefit accruing to the company from the establishment of this and similar industries at Vereeniging is considerable; directly by the sale of coal, silica and magnesite bricks and indirectly by the sale of erven, building bricks, tiles, etc. The works of the Transvaal Blast Furnace Company, Ltd., are now in full swing. The furnace using hot blast is now producing pig iron. During the year, under review, another industry, new to South Africa, was started on the company's property at Viljoen's Drift, viz., the South African Chrome Industries, Ltd. Now that the war is over and peace is in sight the establishment of a number of other industries which was deferred on account of the impossibility of obtaining material is again in contemplation—in fact everything points to Vereeniging becoming the largest industrial centre in South Africa.

I am pleased to place on record the appreciation of the directors of the services rendered to the company by the general manager and the staff.

I now beg to move the adoption of the directors' report and the accounts.

Mr. George Falcke seconded and the report and accounts were adopted.

Messrs. C. B. Kingston and Julius Weil, retiring directors, were re-elected. Messrs. Douglas Low and Co. were reappointed auditors.

SOUTH AFRICAN LANDS.

Mr. G. C. Fitzpatrick presided on May 20 at the annual meeting of the S.A. Land and Exploration Co., and there were also present Messrs. E. Mansfield, T. W. Cullinan, Emil Lewin, E. M. Geard, J. H. L. Manisty, J. H. Keegan, A. D. Viney, and L. A. Whiteley (secretary): 65,937 shares were represented out of £399,000 issued capital.

The Chairman said that before moving the adoption of the report he wished again

to refer to the absence of their chairman, Lieut.-Colonel Andersson. He had now arrived in London, where he was undergoing medical treatment for his arm, which was seriously injured in the engagement in which he was taken prisoner. It was expected that he would return to South Africa within a few months, and he trusted that at the next general meeting they would have the pleasure of seeing him preside in person. Dealing first with the accounts, they would find that the financial position showed a slight improvement. On balance the revenue exceeded the expenditure by £78 6s. 7d., which was a small improvement on last year. The cash and cash assets amounted to £26,207 18s. 2d., which included £4,000 British 5 per cent. Exchequer bonds, 1920, and £11,150 Union of South Africa 5 per cent. Local Registered Stock; £9,650 of the latter amount was free of income tax. The item of sundry debtors consisted principally of the balance of the purchase consideration of certain farms sold. With regard to Vlak-

laagte No. 39, the tributor reported that his operations up to the present had not been very successful. His work was seriously interfered with by the scarcity of labour and by the influenza epidemic. A small quantity of tin concentrates had been recovered but had not yet been realised. Since the date of the last meeting West Springs, Ltd., had been formed and had commenced work. As they knew, this company's property adjoined the eastern boundary of that portion of Witpoort No. 12 which belonged to this company. Their farms had remained under the supervision of the Transvaal Landowners' Association, and their thanks were due to the secretary and district agents for their assistance in securing suitable tenants for properties and in the collection of rents.

The motion for the adoption of the report and accounts was adopted, and the retiring directors, Messrs. R. des Clays and J. H. L. Manisty, were re-elected.

Prices After the War.

The concluding observations in the Ministry of Reconstruction pamphlet on "Prices During the War and After" read as follows: "It is not likely that the business of the world, as a whole, will expand more rapidly in the years of painful post-war reconstruction than it did in 1904-14. And we have seen that in those years prices were rising, partly, at any rate, owing to the gold position; or, in other words, the world's money supply, based on gold, was expanding faster than the world's business, so that prices went up. In the post-war decade, people having learnt to do without gold and to multiply other forms of money, we may expect this process to be intensified. That is why it seems reasonable to assume that, when all the transition obstacles have been surmounted—successfully, let us hope—the general level of prices at which we shall arrive will be a good deal above the 1914 level. With luck it might be only 25 to 30 per cent. higher. But it may prove to be higher still, for very much depends on unknown factors, the wisdom of future Governments in all the countries of the world, the course of international relations, the efficiency of industry and the world's peace, peace among nations, and peace among classes."

Royal Mint Report.

The report of the Deputy Master and Comptroller of the Royal Mint recently issued, for the year 1916, shows that 266 million coins were struck—an increase of nearly 52 millions over the previous highest total. Practically the whole of this number was for Imperial silver and bronze coinages, the demand for these issues being very heavy. The excess of receipts over expenditure for the year reached a total of 4½ million pounds, the greater part of which sum consisted of profit on silver coinage. Sir Edward Rigg, superintendent of the operative department, in his memorandum refers to the erection of a No. 10 Alldays Empire positive blower, driven direct by a 20 h.p. variable speed motor. Five other motors were added, making the total number now installed 131, and their aggregate h.p. 1,004½. High-power incandescent lamps were increasingly used, their number rising during the period under review from 29 to 74, and an approximately corresponding reduction in the number of arc lamps was made. The mint generating plant averaged 51,609 units per month, as compared with 42,269 in the previous year. The Deputy Master of the Ottawa Branch Mint reports an important extension to the refinery. The branch was called upon to refine gold in much larger quantities than usual, and an entirely new building was erected, within a period of two months, under the supervision and to the designs of Mr. R. Pearson, the assayer. The chlorine process is employed. Two of the four gold cells in the old refinery were used, however, for deposits suspected of containing platinum, namely, jewelers' and dentists' scrap, etc. Five silver cells were also continually in operation, depositing silver from anodes obtained from buttons produced by running down the silver chloride with carbonate of soda to free it from gold. These buttons, which average 30 to 40 per cent. gold, are melted

and cast direct into silver anodes for the silver cells. Six wooden tanks were erected, also, in which the silver chloride produced in chlorination (after gold has been extracted) is washed free from copper chloride, etc., with boiling water, and reduced with iron plates to metallic silver. These tanks are used in series of two. In the first the silver chloride cakes are washed free from copper chloride, etc.; in the second tank they are then reduced to metallic silver with iron plates. The copper is precipitated with iron plates at the ends of each washing tank, taken out, dried, ground, sieved, and sold as copper sweep. Each washing tank holds 48 cakes of silver chloride averaging 260 ounces each, or 12,480 ounces silver chloride per tank, yielding approximately 6,000 ounces fine silver.

WITWATERSRAND DEEP, LIMITED.

(INCORPORATED IN THE TRANSVAAL.)

TENDERS INVITED.

Tenders are invited for the supply of the following articles for a period of twelve months commencing from the 1st July, 1919:—

CANDLES.

QUALITY.—Ten ounce candles manufactured from high-grade stearine and high-grade paraffin wax, containing not less than 15 per cent. stearine. Packed in boxes of 25, 50 or 100 lbs.

QUANTITY.—Approximately 10,000 to 12,000 lbs. required monthly.

ROCK DRILL AND WATER HOSE.

Samples of various sizes are to be submitted with the tenders.

LAME.

Lump Unslaked, or Ball Mill Unslaked, as may be required by the Company.

Tenderers will be required to supply samples and analyses with their tender.

DELIVERY.

Free at Mine Store or Siding.

Tenders for the above are to be submitted on or before Noon of the 11th June, 1919.

For further particulars apply to—

L. CHARLSTON GOCH & CO.,

Secretaries.

90, 94, Exploration Buildings,
Box 4122, Johannesburg.
22nd May, 1919.

The Vereeniging Estates, Limited.

(Incorporated in the Transvaal.)

REPORT OF THE DIRECTORS

Submitted at the Twentieth Ordinary General Meeting of Shareholders, held at Lewis & Marks Building, 65, President Street, Johannesburg, on Saturday, the 17th May, 1919, at 10 a.m.

To the Shareholders,

Your Directors beg to submit their Annual Report and Audited Statement of Account for the year ended 31st December, 1918.

CAPITAL.

The Share Capital of your Company remains unaltered, viz., 730,580 shares of £1 each fully paid and issued.

DEBENTURES.

The Company's Debenture Debt stands at the same figure as last year, viz., £200,000.

PROPERTY.

The area of landed property owned by your Company is the same as last year, viz., 127,340½ acres, of which 80,825 acres are situate in the Orange Free State and 46,515½ acres in the Transvaal.

The Company also owns 704 Erven in the Vereeniging Township.

COLLIERIES.

The output of saleable coal of the Cornelia Colliery for the year 1918 was 581,296 tons, as compared with 592,413 tons for the year 1917. The decrease of 11,117 tons was due to the influenza epidemic.

During the year under review the agreement between the Transvaal Coal Owners' Association (1910), Ltd., and its members was renewed for a further period of five years from 1st July, 1918.

The General Manager's Report dealing fully with the operations of the Collieries for the past year is attached hereto.

MACCAUVLEI FOREST AND ORCHARDS.

The year 1918 was an extremely favourable one for the Forest. The growth of the trees was most satisfactory and the wood increment is very noticeable. The rainfall for the year amounted to 36.79 inches, and, although this is 8.08 inches less than the year 1917, it is nevertheless 10 inches above the average rainfall for this locality.

The systematic protection of the Forest against veld fires, insect pests, weeds, etc., has been duly carried out during the year. Considerable thinning was done in the plantations.

Mining timber, fencing poles, firewood and acorns of the value of £2,433 14s. 4d. were sold during the year.

The Apple crop last season realised £1,783 3s. 11d. Hail severely damaged the fruit, and the continuous rains during the ripening period also had a bad effect.

The whole of the trees in the Orchards, numbering 8,000, were pruned during the winter.

FARMING AND ESTATE OPERATIONS.

The profit on farming for the year under review amounted to £11,934 12s. 4d., as compared with a profit of £20,665 5s. 9d. for the previous year. The reduced profit is due to the failure of the mealie crop and losses in sheep farming caused by the abnormal rains.

THE VEREENIGING BRICK AND TILE CO., LTD.

The Works of this Company have been running full time during the whole year. The demand for roofing tiles, silica bricks, magnesite bricks and acid ware has very materially increased. The Company is making satisfactory profits.

DIRECTORATE.

In accordance with the Company's Articles of Association, two of your Directors, Messrs C. B. Kingston and Julius Weil, retire by rotation, but, being eligible, they offer themselves for re-election.

AUDITORS.

Messrs. Douglas Low and Company, your Auditors, also retire, but offer themselves for re-election. You will be asked to appoint an Auditor or Auditors for the ensuing year and to fix the remuneration for the past audit.

By Order of the Board,

WILLIAM MALLINSON,

Secretary.

Vereeniging, 5th March, 1919.

THE S.A. Mining AND Engineering Journal

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NOTICE.—The postage of this issue of the *S.A. Mining and Engineering Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

Company Chairmen and the Outlook.

Several important pronouncements regarding the outlook for the low-grade mines and the injustice of recent taxation were made at company meetings during the week. Mr. Huroth at the State Mines meeting and Colonel Dalrymple at the Van Ryn Deep and New Kleinfontein meetings made particularly forcible references, which, it is earnestly to be hoped, will not be lost upon our legislators, and which we shall make it our business to return to in our next issue.

The Barnato Meetings.

Mr. John Munro presided at the annual meetings of the subsidiary companies of the Barnato Group this week, and full reports of his speeches will be found elsewhere in this issue. Native labour shortage seems to have been the worst feature of the year. This is particularly serious at the Randfontein Central, where it not only increases the working costs per ton, but it reduces the grade of the ore mined. As Mr. Munro explained, "This arises from the fact that the deeper and richer section of the mine cannot be worked in the necessary proportion to maintain the average grade in the mill. It is possible to obtain voluntary natives for the northern and poorer section of the mine, but these natives would simply leave if any attempt were made to transfer them to the southern section. Thus the shortage of labour at this mine means direct loss of profit owing to small tonnage crushed, and indirect loss owing to increase in working costs per ton crushed, and to the lower average grade of the ore crushed." The two bright features at this mine are first the continued satisfactory value of the development, and secondly the steady progress made in sinking the two new shafts. The older mines have felt the increased war costs, taxation and native labour shortage acutely, but the State Mines and Van Ryn Deep relieve the picture. These mines will be more fully dealt with in our next issue.

The Modder East Reef Strike.

The reef was struck in the No. 2 shaft of the Modder East last week, and it is officially notified that the reef was intersected at a vertical depth of 1,160 feet, the average width being 27 inches, and the average value 6.2 dwts.

The "C.M.S." and Anglo-American Annual Meetings.

Despite some not unexpected criticism at the Springs Mines meeting, the annual meetings of the subsidiaries of the "C.M.S." group and of the associated enterprise, the Anglo-American Corporation, passed off successfully, and will be found fully reported in this issue. Mr. F. R. Lynch presided at the meetings of the subsidiaries, and compressed into his speeches from the chair a great deal of detailed information regarding the progress and prospects of the several companies. Mr. Ernest Oppenheimer presided at the meeting of the Anglo-American Corporation of South Africa, and had, on the whole, a most encouraging picture to present of the large and important interests of the company in the Far East Rand. An interest has also been taken in the National Industrial Corporation of South Africa, which is being formed with a capital of £500,000 by the National Bank. Mr. Oppenheimer's speech will be found to provide a succinct review of the position of the Springs, West Springs, Brakpan and Daggafontein Mines.

The Cape Copper Company and Namaqualand.

The Cape Copper Company, which has for the present stopped work in Namaqualand, has had a remarkably prosperous career. Originally formed in 1863, with a capital of £200,000, divided into 20,000 shares of £10, of which £8 was paid up; by 1888 it had paid dividends to its fortunate shareholders totalling £67 13s. 9d. per share, or slightly over an average of 37½ per cent. per annum for 22 consecutive years. It then reorganised its capital, giving the holders of its 20,000 shares fifteen shares of £2 for each £8 paid-up shares, thus making its capital there £600,000. From then to 1917 it paid £10 0s. 3d. per share in dividends and

bonuses or a further £150 2s. 6d. per original 8 paid-up share; for the latter 30 years the average dividend on the original share works out at 62½ per cent per annum. The holder of an original share, therefore, has had returned to him in dividends £217 18s. 3d. for each share of his original holding, and has a proportional interest in several other concerns as well as the Namaqualand Railway. A truly wonderful record. From the reports of Drs. Wagner, Rogers and other disinterested expert observers, there is good ground for believing other copper occurrences, both of magnitude and value, exist in Namaqualand; particularly in its northern part, where many years ago, before the Hottentots claimed the minerals of the Richtersveldt (a claim definitely disallowed lately) certain persons mined and exported rich copper ore from there by Alexander's Bay. It is possible the stoppage of the Cape Copper Company may give impetus to the exploitation and development of these other known resources, and that the copper production of Namaqualand may again be resumed.

* * * *

The Late Dr. Carl Krause.

The news of the sudden death at Luderitzbucht, on May 20th, of Dr. Carl Krause, came as a great shock to his numerous friends and colleagues, among whom he was held in high esteem. The deceased gentleman, a son of Dr. L. W. Krause, of Brandfort, had already advanced far in the profession of mining engineering, and his untimely death, at the early age of thirty-four, cuts short a career of exceptional promise. Born in Bloemfontein in 1884, he received his early education in that town. In 1902 he proceeded to Germany where he spent six years at the Royal School of Mines at Freiberg, eventually graduating with first-class honours as Doctor Ingenior. In 1908 he returned to the land of his birth, and was for some time engaged in mine surveying on the Witwatersrand. In 1909 he was offered and accepted the post of manager of the Kolmanskop Diamond Mines in (German) South-West Africa, where, except for brief periods spent in the Union, he resided until the time of his death, playing a notable role in the development of the South-West African diamond industry. Apart from the managership of the Kolmanskop Company, which he resigned in 1910, he held a number of very important appointments, including those of Assistant Manager of the Koloniale Bergbaugesellschaft, Assistant Engineer to the South-West Africa Company, Manager of the Northern Diamond Fields for the Koloniale Bergbaugesellschaft and Consulting Engineer to the Luderitzbucht Chamber of Mines, the position which he held at the time of his death. In 1910 Dr. Krause was commissioned to prepare a detailed report on the now famous Pomona Area, and it was largely on the basis of his recommendations that the dispute over the ownership of the fabulously rich diamond deposits in the Idatal and adjacent valleys was finally settled. Though his manifold duties allowed him little time for writing, Dr. Krause made two important contributions to South African geology, namely, a report on the geology of the Kaokoveld in South-West Africa, and a paper on the origin of the South-West African diamonds, which is published in the "Transactions of the Geological Society of South Africa." A man of sterling character and great natural ability, a loyal and affectionate friend, generous to a fault, and the most genial and entertaining of companions, Carl Krause will be sadly missed in a world where men of his stamp are all too rare.

* * * *

Rhodesia Exploration Co.

The secretary of the Rhodesia Exploration Company states that the Stock Exchange Committee have granted permission for the shares to be dealt with on the London Stock Exchange. The position of the company was exhaustively explained at the recent meeting, and the only matter of importance which has since transpired is the adverse judgment of the House of Lords in the appeal *re* Globe and Phoenix Gold Mining Co., Ltd. The company is, next to the Chartered Co., the most important holder of land in Rhodesia. It has valuable interests in the Far Eastern Rand, and after payment of all expenses in connection with the late litigation, has liquid resources exceeding £120,000.

Nigel Gold Mine.

In their report for the year ended December 31 last, the directors of the Nigel Gold Mining Company remind shareholders that in 1916, consequent on the disappointing results of development in the eastern section of the mine, and the company's financial position, as well as the impossibility at the time of raising capital to prosecute the consulting engineer's scheme of further operations, it was decided to stop development, mine and mill the ore reserves, and with the proceeds to pay off all liabilities and then close down the mine. By the crushing of the ore reserves it was considered that sufficient money would be obtained, not only to clear the company of debt, but also to place it in such a strong financial position as to be able to await the turn of events after the end of the war. The directors' anticipations were realised, and both of these objects have been accomplished. As much of the ore reserves as could be economically extracted were treated by the end of December, 1917, and on January 3, 1918, the mill was closed down and operations confined to the treatment of the sands and slimes in the vats, and by the end of February, 1918, the final clean-up was completed and employees discharged. The treatment of sands and slimes and the general clean-up during the months of January and February, 1918, resulted in the recovery of gold to the value of £12,687; the expenses during that period were £7,928; the revenue therefore exceeded expenditure by a sum of £4,759. The operations during the first two months of the year were, therefore, not ordinary operations, but merely in accordance with the procedure planned by the directors as before referred to. The whole of the plant at the mine has been maintained in good order since the cessation of active operations. It was considered advisable to write down "plant and machinery" and "buildings" by 15 per cent. as depreciation. Although the war has come to an end, the time has not yet arrived, in the opinion of the board, when any scheme dealing with the future of the company can be submitted. The directors are, however, closely observing the trend of events in the Nigel and Heidelberg districts, and when the embargo imposed by the Treasury in London in respect to financial issues has been raised and the time appears favourable for an appeal for financial support and for dealing with the future of the company in a permanent manner, immediate action will be taken in that direction.

* * * *

Geological Society of South Africa.

The special general meeting of the Geological Society of South Africa, postponed from the 28th April, will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Saturday evening, 7th June, 1919, at 8.15 p.m., at which the following recommendation of the Council will be submitted for consideration and adoption if thought fit: "That certain MSS. and various maps and sketches accompanying same, dealing with the geology of Griqualand West, by the late Mr. G. W. Stow, and now in the possession of the Society, be presented by the Society to the Public Library, Capetown. That library already has in its possession various documents by the same author, and seeing that the MSS., maps and sketches above referred to deal with the geology of a portion of Cape Colony they are therefore of more interest to that Colony than to the Transvaal." Immediately following the special meeting the ordinary monthly meeting of members of the Society will be held, at which the following business will be transacted: The minutes of the ordinary monthly meeting of members held on 28th April, 1919, will be read. Election of new members. The following papers will be open for discussion: "On Certain felsitic rocks hitherto called 'banded ironstone' in the ancient schists around Gatooma, Rhodesia," by A. E. V. Zealley, A.R.C.S.; "Plumasite (corundum-aplite) and titaniferous magnetite rocks from Natal," by A. L. du Toit, D.Sc. The following papers will be read: "A review of the reptilian fauna of the Karroo system of South Africa," by S. H. Haughton, B.A., etc., Assistant Director, South African Museum (by permission of the Trustees of the South African Museum and communicated by Dr. A. L. du Toit,

D.Sc.): "The geology of the country around Pasipas, near Bulawayo," by A. J. C. Molyneux; "The coastal limestone of the Cape Province," by W. Wybergh (communicated by Dr. A. W. Rogers).

* * * *

Zaaipiaats Latest Results.

The directors report as follows for the quarter ended 30th April, 1919: The mill ran on 75 days during the quarter, crushing 6,561 short tons, the duty per stamp being 10.4 tons per 24 hours. The output for the quarter amounted to 160 long tons of concentrates, assaying 69.5 per cent. metallic tin. The results of working show an estimated profit for the quarter of £7,295 1s. 2d., excluding directors' fees and Government taxes. 102 long tons of refined tin, assaying 99.5 per cent. metallic tin, were produced by the smelter. The expenditure on capital account amounted to £918 8s. 1d., as follows: Machinery and plant, £314 2s. 11d.; buildings, £502 19s. 7d.; sundries, £101 5s. 7d. Mining was carried on throughout the quarter in No. 13 and No. 5 sections. Impurities consisting of antimony and various sulphides appeared in the main face of No. 13 section in considerable quantity. At the close of the quarter the values almost disappeared and it has been decided to take no more ore from this face for the time being. A small drive is being pushed ahead with a view of seeing what developments take place. On the other hand, No. 3 branch body in this section is opening up very well and carries good values and clean ore. Development in No. 5 section shows no improvement. Work was recommenced in the T.C.L. lease ground and by close sorting a fairly good grade of ore is being obtained from this area. The presence of impurities mentioned above temporarily interfered with smelting operations, and it has been decided to ship a quantity of concentrates in order to relieve the congestion. It is expected that there will be a falling off in the output for the month of May, owing to dangerous hanging having stopped work in No. 3 branch face for the first half of the month. The erection of the temporary plant for the treatment of the Valley alluvium was completed and 18,000 cubic yards of overburden was removed during the quarter. Trial runs have been made with the plant, but continuous washing has not yet been commenced. During the quarter 6,915 tons of ore were mined and disposed of as follows: Waste sorted, 351 short tons; sent to mill, 6,561 short tons. The native labour supply is now sufficient for all requirements. 9.96 inches of rain fell on 13 days during the quarter. Warrants in payment of Dividend No. 18 were despatched to shareholders on the 18th March. During the quarter Mr. R. H. Morley resigned his seat on the board.

* * * *

African City Properties Trust.

The report of the African City Properties Trust for the year ended 31st December last states that the profit, including £10,640 brought in, after deducting all outgoings and £8,958 for debenture interest, amounts to £30,019. The directors recommend a dividend of 5 per cent. on the ordinary shares and to carry forward £11,502. Revenue from rentals shows a fair increase, but the benefit is largely counterbalanced by increased costs and taxation. There has been considerable depreciation in the values of certain properties in the older and less central districts of Johannesburg, and the directors have thought it prudent to make provision for such depreciation and for the redemption of leaseholds by transferring £6,000 to depreciation account. £25,000 debentures were purchased and cancelled in March, 1918, and the discount of £2,585 has been transferred to reserve account, in addition to £2,415 out of profit, increasing the reserve to £85,000. The company's Johannesburg manager writes that the population of Johannesburg is steadily increasing and the municipal valuation has risen from £30,882,413 in 1918 to £31,213,355 at the beginning of the current year.

TOPICS OF THE WEEK.

THE INDUSTRIAL CRISIS.

At last the Union Parliament and the daily papers have awakened to the serious nature of the crisis threatening the mining industry. Both in the Senate and in the Assembly, as the result of the communications from the President of the Chamber of Mines, the matter has evoked a full-dress debate, and the papers are given up to editorials and letters on one or other of the questions at issue. The only tangible result, up to the time of our going to press, is the promise by Mr. Malan of the appointment of the inevitable Commission, in addition to what he describes as "three remedies." These are, first, a request to the Imperial Government to use its influence with the Bank of England to remit to the industry for the benefit of the low grade mines a portion of the accumulated insurance funds charged on the shipments of gold during the war. Second, an appeal to the Imperial Government to allow the shipment of gold direct to the best markets to take advantage of the favourable rate of exchange. And, third, Mr. Malan repeated his promise of a refinery and mint, without, however, vouchsafing any information in regard to its situation. Mr. Malan, in opening his remarks, made the notable admission that the letter of Sir Evelyn Wallers contained nothing that was new, and in regard to the Provincial taxation anomaly, he declared that as the question was *sub judice* the Government could take no action. The President of the Chamber of Mines has lost no time in replying to the Minister in regard to these points, and no apology is needed for putting his wires fully on record in another part of this issue. Regarding the refinery and mint, for which we note the Government is asking for a vote of £50,000—deferring its discussion till the introduction of a special Bill—the Chamber of Mines states it is prepared "to erect and equip for the Government on a suitable site on the Witwatersrand, and according to plans approved by the Union Government, a refinery and mint sufficiently large to deal with the whole annual output of British South Africa, including Rhodesia, subject to the conditions detailed in previous communications with the Department of Finance, the principal condition of which is that the Government makes no profit on the mint except on silver coinage, the Chamber guaranteeing the Government against any loss." This should greatly simplify the question for the Government, and finally dispose of the absurd claims of Pretoria. The statement made by the Minister in regard to Provincial taxation is also very clearly and forcibly dealt with by the President of the Chamber, who declares that he has already assured the Government that the Chamber will drop the New Modder test case if such taxation on the part of the Provincial Council is made illegal by the Union Government in future. In a previous communication he significantly says that the latter step would furnish an earnest of the Government's stated desire to treat the industry fairly; and it seems to be generally agreed that the Government has here convenient to hand a ready means of demonstrating its practical sympathy with the industry. The last point emphasised in the wires from the Chamber to the Minister is the loss occasioned by the absence of a free market for its product. The industry has no desire to sell its gold elsewhere than to the British Government, but thinks it only fair that the loss suffered by it through the necessity of so selling should be made good by the Imperial authorities. Evidence accumulates daily—notably from Australia, the U.S.A., and the Far East—that the product of the Rand would command a higher price in a free market; and those who administer the mines owe it to their shareholders, in the present time of crisis, to secure the full price for that product. The Chancellor of the Imperial Exchequer, and the London papers, headed by the *Times*, have recently admitted the justice of this claim, and the Union Government ought to be able in the present circumstances to secure its recognition. If these several requests of the Chamber be acceded to without undue delay, there seems to be hope that the worst may yet be averted. If they are not, then we fear that no Commission, however ably and impartially constituted, can be of much avail.

Released from Admiralty Control

DELTA METAL

The Delta Metal Company, Limited, East Greenwich, have cabled that they are again open to receive orders for South Africa.

SOLE AGENT:

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H. ALERS HANKEY,

P.O. BOX 3807.

STANDARD BANK CHAMBERS, JOHANNESBURG.

NEW MODDERFONTEIN: THE RAND'S PREMIER PROFIT EARNER.

Spectacular Achievements—Results for the Current Year Anticipated—Exceptionally Strong Development Position—"Life" and the Upper Leaders—Some Facts for Investors.

THE New Modderfontein mine is the premier profit-earning proposition of the Witwatersrand at the present day, and, having regard to its firmly established development position, its high rate of profit earning, the prospect of the splitting of the shares in the near future, and the fact that a large block of shares formerly in the possession of enemy subjects is now held by the Custodian of Enemy Property, the shares and prospects of the mine invite the special attention of investors.

HISTORY IN BRIEF.

The New Modderfontein commenced production in 1895 with a 40-stamp battery, and for the first two years of its productive history worked at a loss. From June, 1895, to May, 1896, the average value recovered per ton was 18s. 10d., whilst working costs were no less than 61s. 10d. per ton! After May, 1897, however, the company earned profits up to the period of the Anglo-Boer War. Crushing was resumed in 1903 with 60 stamps, and the profit during the twelve months ended with May 31st, 1904, was £26,750. Profits increased to £100,000 in the period ended with June, 1907, and in that year the company entered the dividend list with a distribution of 8½ per cent. Since that date there has been a steady and progressive improvement in the company's achievements, and in the last completed financial period (year ended with June 30, 1918) the company crushed 684,100 tons for a yield of 373,847 fine ounces, and secured a working profit of £833,264, or 24s. 4d. per ton, the average recovery per ton being 45s. 7d., with working costs at 21s. 3d.

RESULTS TO DATE.

Up to the end of June, 1918, the total and average results secured by the company since its inception have been as follows:—Tons milled, 6,792,480; value of output, £12,473,581; per ton, 36s. 9d.; working expenditure, £6,553,159; working cost per ton, 19s. 4d.; working profit, £5,920,422; working profit per ton, 17s. 5d.; dividends declared, £1,003,750. Since the conclusion of the financial year the New Modderfontein Company has secured even better results than were obtained in the period ended with June. For the first five months of the current financial year the tonnage milled averaged 72,600 per month, and the profit £90,285, or 24s. 10½d. per ton milled. In December the ore milled dropped to 76,000 tons, and the working profit to £85,062, largely on account of the influenza epidemic. In the quarter ended with March last 242,000 tons were milled for a working profit of £279,614, or 23s. 1d. per ton; whilst in April the company crushed 82,000 tons for a profit of £90,131, or 22s. per ton.

THE CURRENT YEAR'S PROFITS.

For the first ten months of the company's current financial year the working profit earned has been approximately £906,000, and it therefore looks as if the operations for the twelve months to end with June will result in the earning of close on £1,100,000. In respect of the current year's operations, a dividend of 30 per cent., or 24s. per share, was declared in December, and the above figures indicate an ability on the part of the company to distribute at least an equal amount in respect of the operations for the final half of the year.

FINANCE.

The company's financial position as at March 31st last is set forth in an interim appropriation account (subject to amendment), which shows: Expenditure on Capital Account (Development and Equipment and Undermining Rights Annuity), £78,116; Government and Provincial Taxes, £169,039; Dividend Account—Dividend No. 25 of 30 per cent., declared 20th December, 1918, £420,000; bal-

ance carried to balance sheet, £464,811. The credit balance of appropriation account is not wholly available for distribution. The balance of £464,811 shown above is made up of net cash £249,428, and "sundry assets" £215,413. Government and Provincial taxes includes provision for taxation under the Transvaal Provincial Gold Profits Tax Ordinance, 1918, for one year and nine months to 31st March, 1919.

ORE RESERVES AND CLAIM AREA.

The mine is in an exceptionally strong position as regards development. At the end of June, 1918, the ore reserve had been remeasured and revalued, and amounted to 9,000,000 tons of an average value of 8·6 dwts. per ton on an average stoping width of 65 ins. During the current year development operations and also crushing operations have been hampered by the influenza epidemic and the resultant disorganisation of the native labour force. Development operations were, however, resumed on a large scale in the March quarter. The total footage driven, sunk and risen was 2,107 feet, and the total footage sampled on reef 1,000 feet. The payable reef disclosures were: Main Reef Leader 930 ft., width 15 ins., assay value 44 dwts. The fine development position obtaining at the end of the year was graphically described by Sir Evelyn Wallers in his last annual speech, when he stated that the total claim area of the property is 1,301 claims, of which the barren area north of the outcrop amounts to 36½ claims, and the worked out area at 30th June amounted to 241 claims, leaving approximately 1,024 claims. Of this balance approximately 289 claims are represented by the ore reserve. The accumulated unpayable area developed to date covers 96 claims, whilst the undeveloped area stands at approximately 639 claims. It is interesting and gratifying to note that the area equivalent to the ore reserve is greater than the total area worked out since the commencement of operations in 1895.

THE UPPER LEADERS.

A further important and favourable feature in connection with development and tonnage was disclosed by Mr. H. Stuart Martin, the company's Consulting Engineer, in the last annual report, when he stated that the prospecting of the upper leaders, particularly in the central section of the mine down to and including the 14th level, was continued with success. We understand that in many places these leaders disclose very high values, and that they may have a most important influence on the life of the mine. The New Modder is now equipped with reduction plant capable of dealing with 1,200,000 tons per annum. The mine is in a position easily to deliver such tonnage, and given an adequate labour force the New Modderfontein could substantially and immediately improve on its present excellent rate of profit-earning.

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THE MINES AND THE RAILWAYS.

How Revenue would be Affected by the Closing Down of the Low Grade Mines—The Snowball of Unemployment—How do the Government Propose to Meet the Deficit?

ALTHOUGH there at last appears to be some evidence of Government interest in the letter addressed by Sir Evelyn Wallers to the Acting Prime Minister on the critical position of the gold mining industry, we do not think that either our legislators or the public at large have yet realised the seriousness of the situation which would inevitably result from the closing down of the low-grade mines which have found the tide of war adversity and inordinate taxation too much for them. It is absolutely amazing to us that it is possible to find in this or any other country a party of men elected by the people who are calmly prepared to see an industry which contributes not less than 60 per cent. of the people's revenues in jeopardy without stretching out a single hand to save that industry from a situation which will well-nigh bring the country to bankruptcy. For that is what the outlook amounts to unless substantial and immediate relief is forthcoming. There may be nothing new in the assertions and statistical facts contained in this article, but because of the critical nature of the position and the general inability or disinclination of the Union's representatives to view these things in their proper perspectives we feel that we should be lacking in our duty did we not present and continue to present in the most telling manner possible the effect of killing the milk cow of the whole country.

In Part II. of the Minutes of evidence taken in the Union of South Africa in 1914 by the "Royal Commission on the Natural Resources, Trade and Legislation of Certain Portions of His Majesty's Dominions" there appears on pages 116 and 117 under the heading of Appendix XIII. certain "Correspondence as to the Proportion of Revenue of the Union which is derived from the Mining Industries of South Africa." In this there appears a letter written by Mr. James R. Leisk, Secretary for Finance, to Sir Edgar Vincent, Dominions Royal Commission. "My deliberate opinion," wrote the Secretary for Finance, "arrived at after looking at the matter from all points of view, is that it would be no exaggeration to regard 60 per cent. of the Union's revenues as being directly or indirectly attributable to our mining industries, leaving only 40 per cent. as the yield from other sources." Since these words were written there has been no material change in these ratios of revenue.

We find it in the appendix to the Report of the Select Committee on Gold Mining (April, 1918) that Mr. Leisk in 1916 informed the Dominions Royal Commissioners in reference to additional taxation that "the incidence of that taxation has not materially altered, therefore the proportion of our national income that is directly or indirectly attributable to mining has not been substantially altered." The Report of the Select Committee (1918) remarks of this: "The Commission apportioned Mr. Leisk's 60 per cent. of the revenues between the Witwatersrand on the one hand and other mining centres on the other, in the proportion of three-fourths to one-fourth. This 75 per cent. of the mining revenue, or 15 per cent. of the total revenue of the country was estimated by the Commission to proceed from the Rand The Commission referred this statement to the Secretary of the Chamber of Mines, who expressed the opinion that the estimate considerably underestimated the share of the revenue of the Union, which is ultimately borne by the mines."

It may help to elucidate these facts and figures and accentuate the seriousness of the present position if we apply the foregoing data to one branch of the public services, the principal revenue-raising service of the country—the Union's Railways. The Railways are the main arteries of this country's commercial body just as the Rand is the industrial heart of the Union. The summary estimate referred to in Mr. Leisk's letter appears on page 117 of the Report, Part II. It establishes Mr. Leisk's opinion referred to above, and, inter alia, exhibits the fact that out of a total revenue of £13,210,000 derived from Railways and subsidiary services no less than £6,320,000 (or 47 per cent.) of this revenue was directly traceable to mines and mining population. How would our Railways be affected by the cessation of work at the 16 low grade unprofitable mines referred to in Sir Evelyn's letter? It is not difficult to give an approximate estimate of the direct influence on railway traffic which closure would almost immediately entail. In April of this year the 16 mines in question crushed 515,902 tons, or over 25 per cent. out of 1,993,652 tons for the whole industry. The tonnage milled is a convenient and pretty reliable unit upon which to base calculations, and we may therefore be permitted to apply these calculations to the figures given in regard to Railway revenue. We have seen that 47 per cent. of the Railway revenue is directly traceable to the mines and mining population, and that roughly three-quarters of this 47 per cent., or over 35 per cent. is derived from the Rand. Again, the 16 unprofitable mines represent on a crushing basis more than 25 per cent. of the Witwatersrand gold mining industry. We arrive therefore at the view that cessation of work at the low grade mines in question would have the direct and immediate effect of reducing the revenue of the Railway, which is the principal instrument of taxation in the country by 9 per cent. This would be the direct loss only—the indirect losses are not easy of calculation but they can readily be imagined. It does not, for instance, require a particularly long-sighted person to foresee that retrenchment of Railways and Harbours employees would follow. Carrying on these calculations to their logical conclusion, 9 men out of every 100 at present employed by the Railways would be thrown out of work and would further aggravate the terrors of unemployment resulting from the paying off of the 6,000 employees of the low-grade mines. Every branch of the community would suffer seriously in consequence, and depression would grow like an immense snowball rolling down a mountain side of unemployment. How does the Government propose to recover this loss of revenue (from one branch of the Public Services only, mark you), which would inevitably result from cessation of work at the low grade mines? Obviously it is not to be obtained from the surviving mines unless the Government desires to see them closed down too. Where then is it to come from?

GOVERNMENT NOTICE.

TENDERS for the Supply of DRILLING CABLE.

Tenders will be received by the Chairman of the Union Tender Board, Union Buildings, Pretoria, up till 3 p.m. on the 18th June, 1919, for the supply of about 10,000 feet of 13-inch manilla drilling cable, left laid, for immediate delivery, f.o.r. at a South African port. Any further particulars may be obtained from the Director of Irrigation, Union Buildings, Pretoria.

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THE RAND MINING INDUSTRY AND THE GOVERNMENT.

Questions of Provincial Taxation, Mint and Disposal of Gold Bullion.

SIR EVELYN WALLERS, President of the Transvaal Chamber of Mines, acting on behalf of the Chamber, has this week sent several important telegrams to the Acting Prime Minister (the Hon. F. S. Malan). On Monday he wired as follows in regard to Provincial gold taxation:—

The Chamber notices that no reference is made in your letter of the 16th instant to the wrongful taxation of the mining industry by the Transvaal Provincial Council. The Chamber trusts that the omission was due to a reconsideration by the Government of this important matter and to an intention immediately to introduce legislation to remove the danger of Provincial Councils taxing the mining industry in future. Such legislation would apparently be readily passed by Parliament, mining taxation being a national matter, and its enactment at the instance of the Government would furnish an earnest of the Government's stated desire to treat the industry fairly. If no action be taken, then the Chamber must regretfully come to the conclusion that it is intended to continue sacrificing the industry to political considerations.

Later another telegram on the same subject was sent as follows:—

You are reported to have stated in the House last night that the fact that the legality of the Transvaal Provincial gold tax being *sub judice* prevented the Government from taking action. I am unable to understand this argument, but in any case have already intimated that the Chamber is prepared to drop the test case now pending if such taxation is made illegal in future. It would appear that your statement, if it is as reported, may tend to mislead the House and the public. Consequently I am publishing this and yesterday's telegrams.

COMPARISON WITH AUSTRALIA.

The following telegram was despatched on Tuesday to Mr. Malan in regard to the loss suffered by the industry through the arrangements made for the disposal of gold bullion both during the war and at the present time:—

The Chamber of Mines would again direct the attention of the Government to the heavy loss imposed on the gold mining industry under the present arrangements for the disposal of South African gold bullion. As stated in our letter of April 15 last, we understand that, after allowing for all charges, Australian gold producers have been and are receiving more for their gold than those of South Africa to the extent of about 1s. 8d. per fine ounce during the war and 1s. per fine ounce under the present conditions. It is hoped that the Union Government will approach the British Government with a view to an adjustment and a refund of any deficiency so accruing to the South African gold industry as compared with the Australian gold industry.

In addition, the restriction on the free export of gold is resulting in great loss to the mining industry as compared with the position which would exist if gold could be sold in the best market. The industry has no desire to sell its gold elsewhere than to the British Government, but thinks it is only fair that the loss suffered by the industry through the necessity of so selling should be made good

to the industry by the Imperial authorities. The industry's position is now so serious that it is essential that every consideration which it can rightly claim should be given to it. During the war it has borne additional burdens amounting to over £15,000,000. A crisis is rapidly approaching, and consequently the relief in the directions above mentioned should be obtained with the utmost despatch.

THE MINT.

Sir Evelyn Wallers, President of the Transvaal Chamber of Mines, telegraphed as follows to the Acting Prime Minister (Mr. F. S. Malan) on the subject of the establishment of a mint and refinery:—

With reference to the establishment of a Mint and refinery, this most important matter should be accelerated in view of the necessity of assisting the industry wherever possible without unnecessary delay. In order to achieve this the Chamber repeats its offer to erect and equip for the Government on a suitable site on the Witwatersrand, and according to plans approved by the Union Government, a refinery and Mint sufficiently large to deal with the whole annual output of British South Africa, including Rhodesia, subject to the conditions detailed in previous communications with the Department of Finance, the principal condition of which is that the Government makes no profit on the Mint except on silver coinage, the Chamber guaranteeing the Government against any loss.

PERSONAL.

Mr. E. Deebble has succeeded Mr. Catesby Holland as Chairman of the Wit. Deep, Ltd. Mr. Holland remains a director of the company.

* * * *

Mr. K. B. Quinan, Manager of De Beers Explosives Works, and Mr. Leslie Simson, formerly well known on the Rand, passed through Johannesburg on their way north on a hunting trip last week.

* * * *

The Minister of Mines and Industries has appointed the following to act as an Advisory Board in regard to industrial questions: Mr. H. O. Buckle (chairman), Sir Evelyn Wallers, K.B.E., Messrs. R. Niven, A. Crawford, and J. Forrester Brown.

* * * *

The death has occurred of Mr. Carl Krause, Consulting Engineer, eldest son of Dr. W. Krause, Brandfort, O.F.S., who was well known in mining circles on the Rand, and at the time of his death was acting as Consulting Engineer to the Chamber of Mines at Luderitzbucht.

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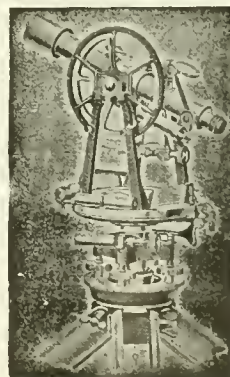
CLOSER WORKING AND JOINT HOUSING OF TECHNICAL AND SCIENTIFIC SOCIETIES.

THE following is a summary of the proceedings at a joint meeting of representatives of the Councils of the various South African technical and scientific societies held in the Council Chamber of the Transvaal Chamber of Mines, on Thursday, April 24th, 1919, to consider the question of the closer working and joint housing of technical and scientific societies in Johannesburg, and a paper on the subject prepared by Mr. Percy Cazalet on behalf of the sub-committee representing the S.A. Institution of Engineers, the Chemical, Metallurgical and Mining Society, and the S.A. Institute of Electrical Engineers. There were present: Mr. Percy Cazalet (S.A. Institution of Engineers) in the chair. S.A. Institution of Engineers: Messrs. R. C. Atkinson, W. Elsdon-Dew, W. Ingham, E. J. Laschinger, C. D. Leslie and A. Robertson. Chemical, Metallurgical and Mining Society: Messrs. R. C. Atkinson, A. F. Crosse, C. J. Gray, C. M. Greathead, H. S. Meyer, S. H. Pearce, F. Rowland, G. Hildick-Smith and J. A. Wilkinson. S.A. Institute of Electrical Engineers: Messrs. A. L. Ballard, R. F. Botting, V. A. Bright, W. Buchanan, C. H. O. Dutton and L. B. Woodworth. Association of Transvaal Architects: Messrs. M. W. Carpenter, J. S. Donaldson, H. L. Durell, F. L. H. Fleming, E. W. Powers, D. M. Sinclair and H. G. Veal. Institute of Land Surveyors of the Transvaal: Messrs. W. M. Harris and G. A. Watermeyer. S.A. Association of Analytical Chemists: Messrs. J. S. Jamieson and J. McCrae. S.A. Geographical Society: Messrs. H. B. Fantham and Jas. Hutcheon. Geological Society of South Africa: Messrs. J. J. Garrard, C. J. Gray and E. Renaud. S.A. Association for the Advancement of Science: Messrs. Percy Cazalet, C. E. Moss and H. E. Wood. Astronomical Society: Mr. R. T. A. Immes. S.A. Society of Civil Engineers: Messrs. A. J. Beaton, W. Ingham, J. Mackenzie and M. W. Robinson. Royal Society of South Africa: Dr. C. E. Moss. Institute of Mining and Metallurgy (local branch): Messrs. S. H. Pearce and G. Hildick Smith. In attendance, W. W. R. Jago, secretary, joint committee. Mr. Percy Cazalet was elected to the chair. The chairman announced that in addition to the list of societies appearing in the paper under consideration the S.A. Biological Society and the Institute of Mining and Metallurgy, London (local branch), had been invited to attend. Letters were read from Messrs. E. G. Izod, Bernard Price, J. Harbottle and J. W. Kirkland, who were unable to be present, supporting the scheme for joint housing of technical and scientific societies referred to in the paper. A letter was read from the secretary of the Royal Society stating that that society was endeavouring to promote closer working of societies, and was discussing possible joint housing for the societies in Capetown. The chairman announced that in addition to the promised donation from Mr. C. D. Leslie already noted in the paper before them, Mr. W. Ingham had asked to have his name put down for 100 guineas. He also read a letter from a writer who wished to remain anonymous stating that he intended approaching his fellow directors with a view to a contribution of approximately £500 towards the necessary funds. The chairman then addressed the meeting recapitulating the various advantages to be gained by joint housing of technical societies and the reasons which had weighed with the sub-committee in deciding on the proposed scheme, and in so doing dealt with the action which had been taken in other countries in this connection, and exhibited slides of the engineering societies' building in New York. He then moved the resolutions appearing at the end of the paper under consideration [We hope to print this paper in an early issue.] Messrs. J. A. Wilkinson (Chemical, Metallurgical and Mining Society) and W. Buchanan (S.A. Institute of Electrical Engineers), members of the sub-committee, spoke in support, and a general discussion then took place thereon. This discussion indicated a unanimous approval of the principle of joint housing of technical societies as laid down in the paper, although it was pointed out on behalf of some of the societies represented, that while agreeing to the principle they were not empowered to commit their society to any definite decision in regard to

financial assistance towards the scheme: as in the first place, some societies had no funds at their disposal for such purpose, and secondly, where such funds did exist their disposal was governed by certain hard and fast rules in their constitution. It was felt, however, that details of this kind could better be dealt with by the joint committee of representatives of the various societies, the members of which it was proposed each society should be asked to appoint after the principle had been approved by the respective societies.

Eventually the resolutions appearing at the end of the paper were amended and agreed to as follows: (1) Is desirous of securing in Johannesburg a joint house with such other technical and scientific societies as have an appreciable proportion of their members resident on the Rand. (2) Agrees to pay in an annual sum either based on a *per capita* or other scale to be agreed, to a Trust Fund, the money so raised to go towards the cost of providing such joint institute. (3) Further undertakes, if legally possible, to loan at interest any capital sums which it is, or may become possessed of from time to time, to such joint institute for its legitimate purposes. (One vote against.) (4) Hereby appoints two members with power to act in conjunction with representatives of other participating societies as a joint committee towards the desired end; including appealing for funds, drafting a constitution, fixing the basis of contributions and, if these are approved by individual societies, securing land or buildings for permanent or temporary quarters and generally to be responsible for the bringing to fruition of the scheme for the joint housing of technical and scientific societies on the Rand. (5) Agrees that the joint committee shall be empowered to receive and deal with suggestions put forward by any of the participating scientific and technical societies through their nominated representatives. (6) Agrees to the inclusion of the following societies, or so many of them as may jointly or severally agree to take part in the scheme as participating societies, namely: S.A. Institution of Engineers, Chemical, Metallurgical and Mining Society, S.A. Institute of Electrical Engineers, Association of Transvaal Architects, Institute of Land Surveyors of the Transvaal, S.A. Association for the Advancement of Science, Geographical Society of South Africa, Geological Society of South Africa, S.A. Association of Analytical Chemists, Astronomical Society, S.A. Society of Civil Engineers, Royal Society of South Africa, Institute of Mining and Metallurgy (local branch).

The chairman expressed the hope that the paper would be read and the amended resolutions set forth therein would be put before the various societies at the earliest opportunity, and on his suggestion it was agreed that the societies be asked to advise the secretary of the Committee as to their agreement or otherwise with the resolutions by the middle of July, and in the case of those unable previously to hold meetings the Council should frame a reply. The meeting then terminated with a vote of thanks to the chairman and to the Committee that had been engaged in drafting out the scheme set forth in the paper.



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MINERS' PHTHISIS PREVENTION COMMITTEE'S REPORT.

Summary and Review of the Work Done in the Last Three Years.

The Miners' Phthisis Prevention Committee's last report was published in March, 1916, and dealt with the work accomplished to 31st December, 1915. Since that date investigations have been continued, but there did not seem sufficient material to justify the compilation and issue of a further report. Some of the results, such as those dealing with the purity of mine water and with the testing of the komimeter, have been communicated to the Transvaal Chamber of Mines and the mines to facilitate their early adoption. A general summary of work done during the past three years serves a useful purpose, and is presented in the latest report, which deals with the work accomplished to date.

Since the 31st December, 1915, there have been fifty-four meetings of Sub-Committees and thirteen meetings of the General Committee. The expenditure of the Committee is met by equal contributions from the Government and the Transvaal Chamber of Mines. The principal questions dealt with since the 31st December, 1915, have been the conditions obtaining in crusher-houses and sample crusher-rooms, the amount of dust permissible in mine water used for feeding water-drills, the ventilation of mines, experiments with various types of drills, and improvements in the sampling and determination of dust in mine air.

It is impossible to do more here than set out the conclusions of the report. These are as follows:—The work of the Committee during the past three years, as described herein, may appear not to have been productive of any very striking or important results. It was, however, inevitable that, after the main principles of dust prevention and alleviation had been worked out, there would be little left to do but to apply those principles in detail and to continue testing individual operations and new methods. Our General Report of 1916, dealing with the results of our first four years' labour, gave a comprehensive survey of the whole field and indicated clearly the principles and methods of dust prevention. There is little to amend to-day in what we have stated in that Report, but progress has not been arrested in consequence. It will be readily understood that the discovery of new methods or the design of new forms of apparatus for the prevention of dust does not immediately result in their adoption and use in such an extensive field of mining as the Witwatersrand. The utility of these novelties has to be demonstrated, and they have to be brought to the notice of managers and consulting engineers and others in control of the industry. Thereafter, the great army of subordinate officials and white workmen, and of natives, have to be taught their use and to acquire an appreciative understanding of their value. This last result it has taken years to accomplish, but it may probably be said, with a fair approximation to the truth, that the danger from dust is now well understood by the manual workers in the mines. Miners generally are not anxious to earn the money paid as phthisis compensation, and, on the whole, readily avail themselves of such means of dust prevention as are placed at their disposal.

We have to-day arrived at the position that workmen frequently protest when the amount of dust resulting from their operations becomes noticeable. Any recurrence of the conditions obtaining 10 or 12 years ago, when the air in working places was frequently so thick with dust that it was difficult to see any great distance, would probably to-day occasion an acute sense of discomfort among workmen, in addition to the apprehension of contracting phthisis. We have, however, not yet got to the stage that industrial trouble ensues when conditions underground become unhealthy. Apparently the question of a slight increase of pay is still looked upon as much more important than one affecting the health of all concerned. In a recent instance, in fact, where the water in a section of one mine was cut off, operations were carried on for several weeks largely

without the use of water, as prescribed by the Regulations, without a protest from any of the workers to the Mines Department.

In paragraph 95 we have already drawn attention to the striking report made by Mr. J. E. Vaughan, comparing present-day conditions on the Witwatersrand mines with those obtaining seven years ago. A useful comparison may also be made with conditions as prevalent elsewhere in the world, and the report mentioned in paragraph 63, which gives full particulars of an investigation into the conditions of the mines in the Joplin District, U.S.A., is particularly illuminating in this respect. The amount of dust found in various operations was generally about ten times as large as it is to-day on the Witwatersrand. Under these conditions, it was found that the average number of years worked underground was as follows: First-stage group, 5.3 years; Second-stage group, 6.7 years; Third-stage group, 7.8 years; No phthisis, 3.9 years. These periods do not differ much from those found by the Medical Miners' Phthisis Commission of 1912 for the Witwatersrand.

Since the amount of dust found on the Witwatersrand during the working shift has diminished so substantially since 1912, and men are now rarely exposed to the enormous quantities of dust generated at blasting time, we have every reason to expect, at least, a great prolongation of the period required for contracting fibrosis, more especially as the lungs are normally capable of getting rid of a certain amount of dust. Whether this normal resisting power covers an amount represented by, say, 300 particles per cubic centimetre, we have at present no means of determining.

Further improvement on present-day conditions may be expected, mainly from better organisation, from continued vigilance and from improved appliances. In the matter of organisation much useful work is already being done by the dust officials appointed under Regulation No. 161 (10), and as these officials become better acquainted with the nature of their work and with its systemization, a higher state of efficiency must necessarily follow. Unceasing vigilance in watching all operations which may cause dust or create other unhealthy conditions is obviously necessary, and it is for this reason especially that a rapid means of dust determination, such as the Committee has described in this report, should be particularly useful. The dust official on every mine should be able himself to sample and determine the amount of dust made in the various operations, and the simpler the apparatus and the method of determination, the more likely it is that it will be utilized as a method of control. A high tribute to the work of the Secretary, Mr. A. Spicer, concludes the report.

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THE YEAR WITH THE INSTITUTION OF MINING AND METALLURGY.

Points from the Council's Annual Report—The Gold Question—New President.

THE April *Bulletin* of the Institution of Mining and Metallurgy is an unusually bulky issue, for not only does it include the 28th annual report of the Council of the Institution, but also the innovation has been made of accepting several pages of advertising matter. During 1918 (the report points out) many questions of national importance have engaged the attention of the Council, and it may be anticipated that their action will produce results far-reaching in their beneficial effects. The Council has acted in an advisory capacity to several State Departments dealing with war services—namely, national service, demobilisation and re-settlement. A special committee was appointed to deal with the last question. It has been in direct communication with the Boards of some 700 mining companies, and is exerting its influence, wherever possible, to expedite the return of members of the profession to civil employment. The Council trusts that the restrictive influences which are so seriously retarding revival in the mining industry may soon cease to operate and that normal conditions may be re-established.

ORGANISATION PROBLEMS.

In the reports for 1916 and 1917 the Council referred to the action taken by the Institution, with the co-operation of the Institution of Mining Engineers, the Iron and Steel Institute, and the Institute of Metals, in pressing upon the Government the establishment in London of a central organisation "to collect and co-ordinate information relating to the mineral resources of the Empire, to stimulate its dissemination and to advise upon measures for protecting and extending the mining and metal industries in the manner best calculated to promote the national safety and welfare." The establishment of an Imperial Mineral Resources Bureau was officially announced in July, 1918. The governing body consists of direct representatives of the self-governing Dominions, India and the Crown Colonies, and representatives of the mineral and metal industries, with Sir Richard Redmayne as permanent Chairman. Substantial progress has been made in anticipation of the completion of the Royal Charter which will define the functions of the Bureau and confer the necessary powers. In reporting the result of the labours of the Joint (Taxation) Committee on the incidence of the excess profits duty and the result of the representative appeal before the Board of Referees in February, 1918, the Council stated that a serious drawback in the whole of the negotiations with the authorities was the fact that the Institution had direct authority only from a part of the companies engaged in the metal-liferous mining industry. The Council has unanimously adopted a recommendation which will be submitted to all mining companies, urging that they should unite in forming a permanent organisation to represent the business interests of the industry.

THE GOLD PRODUCTION QUESTION.

The Council views with grave concern the present position and future prospects of the gold mining industry. It has on several occasions made representations on the subject to the Chancellor of the Exchequer, banking and other authorities, to whom it has also submitted a report on gold production. This question, which most seriously affects the national interests, has been considered by various official committees, but no solution has been evolved. This problem affords another example of the necessity for more complete organisation of the business section of the industry, already referred to, in order that united effort may be directed to its solution. The Council has learnt with satisfaction that the governing body of the Imperial College is about to take steps to raise the status of the Imperial College to that of a degree-conferring University. Whilst the Council considers it is of the first importance that the

Imperial College should co-operate with the University of London and other educational institutions in London with the object of preventing unnecessary over-lapping in the specialised branches of technology, it is not less important that it should extend that co-operation to other universities and colleges in the British Isles and in the Dominions.

ROLL OF THE INSTITUTION.

The total membership of the Institution at 31st December, 1918, was 2,350, as compared with 2,365 at 31st December, 1917. The number of members, associates and students serving with His Majesty's Forces reported to date as having lost their lives in the war, including those recorded in previous annual reports, reaches the heavy total of 102. Mr. Hugh K. Picard has been elected President of the Institution in succession to Mr. Hugh F. Marriott. Mr. Edgar Taylor has been re-elected treasurer. Messrs. R. Gibnan Brown, H. C. H. Carpenter, E. T. McCarthy, Humphrey M. Morgans, S. J. Speak and Sir Robert A. Hadfield have been elected or re-elected vice-presidents for the year 1919-20. Mr. Richard Hamilton (Australia) and Mr. J. B. Tyrrell (Canada) have been elected members of Council to fill existing vacancies and have been nominated for re-election at the annual meeting, which is to be held at Burlington House, Piccadilly, on 8th proximo. With the election of Messrs. Hamilton and Tyrrell, Australia, South Africa, Canada and India are now directly represented on the Council.

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TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Crushing and Profit & Loss Returns for Six Months—Ore Reserves and Dividends—An Interesting Table—Compiled from Chamber of Mines' Statements.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax. Miners' Phtlasis Contributions, etc.

AURORA WEST

Capital: £106,353 (10s. shares).

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	11,800	12,624 21 5	24 9	*2,092 3 7
December	10,700	10,789 20 0	25 6	*2,931 5 6
1919.				
January	12,000	10,985 18 4	23 8	*3,287 5 6
February	11,700	11,885 20 4	25 5	*2,994 5 1
March	15,000	15,504 20 8	21 5	*170 0 7
April	13,800	13,877 20 1	23 3	*2,229 3 3

* Loss.

BANTJES CONSOLIDATED.

Capital: £502,306.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
October	18,150	23,617 26 0	23 2	2,129 2 4
November	21,000	25,724 24 6	17 4	6,992 6 8
December	7,130	12,909 35 2	18 10	5,844 16 5
1919.				
January	3,050	4,409 28 11	21 11	1,004 6 7
February	—	4,447 —	—	—
March	—	4,600 —	—	—

BRAKPAN MINES.

Capital: £850,000; issued £791,100.

Ore Reserves: 2,718,000 tons 8.7 dwts. Dividends, 1918: 32½ p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	45,000	80,507 35 9	26 4	21,052 9 4
December	44,000	85,052 38 7	26 2	26,440 12 0
1919.				
January	42,000	86,241 41 0	25 11	30,874 14 8
February	41,300	81,850 39 7	25 1	29,176 14 2
March	51,500	95,103 36 10	24 7	30,724 11 11
April	47,500	89,606 37 8	24 8	30,407 12 10

CITY DEEP.

Capital: £1,250,000.

Ore Reserves: 3,342,700 tons 9.6 dwts. Dividends, 1918: 27½ p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	46,500	88,731 38 2	30 6	15,893 6 10
December	45,000	91,127 40 6	29 7	22,728 10 1
1919.				
January	45,500	91,415 40 2	28 11	24,887 10 11
February	40,000	78,825 39 5	30 5	17,510 8 9
March	50,000	100,034 40 0	27 9	29,368 11 9
April	48,500	98,222 40 7	28 0	29,199 12 0

CITY AND SUBURBAN.

Capital: £1,360,000 (£1 shares).

Dividend, 1918: 1½ p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	16,490	33,413 40 2	37 10	1,415 1 9
December	15,945	31,624 39 8	39 2	*234 0 4
1919.				
January	15,579	28,765 36 11	39 9	*2,793 3 7
February	13,947	24,437 34 9	40 10	*4,368 6 3
March	16,159	25,474 29 1	38 2	*3,758 7 2
April	17,343	28,765 32 8	35 6	*2,423 2 9

* Loss.

CONSOLIDATED LANGLAAGTE.

Capital: £950,000

Ore Reserves: 2,103,000 tons 6.2 dwts. Dividends, 1918: 5 p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	36,600	47,906 26 1	21 4	8,848 4 10
December	37,400	47,587 24 6	20 9	8,835 4 9
1919.				
January	41,300	51,644 25 0	20 9	8,859 4 3
February	41,000	49,114 23 11	19 9	8,870 4 4
March	47,200	56,074 23 7	19 2	10,818 4 7
April	45,000	55,517 24 6	19 10	10,839 4 10

CONSOLIDATED MAIN REEF.

Capital: £1,247,602.

Dividends, 1918: 3½ p.c. June, 2½ p.c. December.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	41,700	62,985 30 3	28 1	3,026 1 5
December	43,120	65,436 30 2	27 5	4,833 2 3
1919.				
January	44,310	68,367 30 10	27 7	6,551 2 11
February	41,610	67,199 31 10	28 9	6,417 3 1
March	50,140	74,803 29 10	26 0	8,636 3 5
April	47,300	75,185 13 11	28 1	7,753 3 3

CROWN MINES.

Capital: £940,106 (10s. shares).

Ore Reserves: 8,298,000 tons 6.4 dwts. Dividends, 1918: 20 p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	131,000	188,620 28 1	25 3	15,537 2 4
December	132,000	195,379 29 5	25 11	21,596 3 3
1919.				
January	140,000	205,110 29 4	26 4	18,380 2 7
February	124,000	183,948 29 6	27 5	12,970 2 1
March	160,000	222,861 27 9	24 3	25,468 3 2
April	158,000	219,786 27 10	23 5	32,107 4 1

DURBAN ROODEPOORT DEEP.

Capital: £440,000.

Ore Reserves: 1,078,500 tons 6.5 dwts. Dividend, 1918: 2½ p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	25,300	38,399 30 1	28 2	2,002 1 7
December	26,200	38,969 29 5	26 9	3,065 2 4
1919.				
January	23,200	34,908 30 1	30 3	*531 0 5
February	25,000	37,563 30 1	28 1	1,834 1 6
March	27,700	40,795 29 5	27 2	2,698 1 11
April	25,200	35,481 28 0	27 11	*156 0 1

* Loss.

EAST RAND PROPRIETARY MINES.

Capital: £2,445,897.

Ore Reserves: 2,268,000 tons 6.5 dwts.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	112,000	142,630 25 5	22 10	12,054 2 2
December	115,000	137,792 24 0	21 5	11,802 2 1
1919.				
January	115,000	146,424 25 3	23 0	12,606 2 2
February	103,500	134,458 26 0	24 0	8,734 1 8
March	112,000	150,004 26 9	25 1	8,030 1 5
April	110,000	139,814 25 5	23 4	10,020 1 10

FERREIRA DEEP.

Capital: £980,000.

Dividends, 1918: 22½ p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	33,950	59,252 34 11	26 9	12,592 7 6
December	35,500	57,259 32 3	24 11	11,848 6 8
1919.				
January	37,240	62,021 32 4	24 10	13,639 7 4
February	31,700	49,690 30 8	26 7	6,962 4 5
March	37,000	60,505 31 6	25 7	10,289 5 7
April	32,300	56,941 35 3	25 11	14,367 8 11

GEDULD PROPRIETARY.

Capital: £970,000.

Ore Reserves: 2,510,000 tons 7.5 dwts. Dividends, 1918: 11½ p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	41,000	60,794 29 8	20 3	19,152 9 4
December	42,500	62,471 29 5	19 9	20,235 9 6
1919.				
January	42,900	63,402 29 7	20 0	20,364 9 6
February	39,500	60,046 30 5	19 10	19,456 9 10
March	43,500	63,554 29 3	19 2	20,363 9 4
April	42,000	63,113 30 1	19 6	20,806 9 11

GELDENHUIS DEEP.

Capital: £585,753.

Ore Reserves: 1,549,600 tons 5.9 dwts. Dividends, 1918: 7½ p.c.

	Tons.	Revenue.	Cost.	Profit.
		£ s. d.	£ s. d.	£ s. d.
1918.				
November	45,300	54,978 24 3	24 2	*1,002 0 5
December	47,000	55,679 23 8	23 9	*1,348 0 7
1919.				
January	47,400	55,968 23 7	24 0	*949 0 5
February	42,500	50,511 23 5	26 1	*5,489 2 7
March	53,100	61,341 23 1	22 3	1,651 0 7
April	47,500	54,447 22 11	24 6	*1,018 1 8

* Loss.

GOVERNMENT AREAS (MODDER).

Capital: £1,400,000.

Ore Reserves: 9,445,000 tons 8.0 dwts. Dividends, 1918: 27½ p.c.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	100,000	187,274	36 11	21 6	79,648	15 11	
December ...	93,000	171,838	36 6	21 11	69,600	15 0	
1919.							
January ...	106,500	188,344	35 1	21 5	74,431	11 9	
February ...	101,000	179,658	35 7	21 9	69,594	13 9	
March ...	114,000	199,546	34 5	21 0	79,659	14 0	
April ...	116,000	204,448	35 0	20 8	84,479	14 7	

GLYNN'S LYDENBURG.

Capital: £170,000.

Dividends, 1918: 16¼ p.c.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
October ...	2,604	5,331	40 11	32 0	1,056	8 1	
November ...	540	1,096	—	—	*1,330	—	
December ...	1,318	2,239	34 0	44 2	*726	11 0	
1919.							
January ...	2,784	4,126	29 8	—	20	0 2	
February ...	3,160	6,168	39 0	28 7	1,516	9 7	
March ...	3,770	5,841	31 0	26 4	751	1 0	

* Loss.

JUPITER.

Capital: £1,014,200.

Ore Reserves: 674,000 tons 5.98 dwts. Dividends, 1918: 1¼ p.c.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	20,600	24,841	24 0	25 1	*1,466	1 5	
December ...	23,200	28,961	25 0	22 11	1,913	1 8	
1919.							
January ...	26,400	27,908	21 9	21 1	*330	0 3	
February ...	22,100	24,310	22 0	23 3	*1,702	1 6	
March ...	24,400	26,761	21 11	23 1	*1,774	1 5	
April ...	21,200	23,953	22 7	25 8	*3,590	3 5	

* Loss.

KNIGHT CENTRAL.

Capital: £900,000.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	20,500	27,122	26 6	25 2	778	0 9	
December ...	17,350	27,355	30 1	29 2	1,480	1 9	
1919.							
January ...	17,900	27,377	30 7	29 5	996	1 1	
February ...	20,000	28,957	26 8	27 8	*429	0 5	
March ...	19,100	25,639	26 10	29 2	*2,495	2 7	
April ...	20,000	30,367	29 7	29 3	706	0 8	

* Loss.

KNIGHTS DEEP

Capital: £743,526.

Ore Reserves: 1,671,000 tons 4.43 dwts.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	75,900	65,572	17 3	18 5	*5,512	1 5	
December ...	78,000	61,324	15 9	17 6	*7,941	2 0	
1919.							
January ...	85,300	70,262	16 6	16 7	*464	0 1	
February ...	77,600	68,312	17 7	17 8	1,014	0 3	
March ...	88,200	76,175	17 3	16 11	608	0 2	
April ...	82,900	71,451	17 3	17 3	*1,189	0 3	

* Loss.

(d) In addition, £1,448 taken from reserve

LANGLAAGTE ESTATE.

Capital: £886,500.

Ore Reserves: 1,036,200 tons 6.9 dwts. Dividends, 1918: 12½ p.c.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	44,260	56,291	25 5	19 4	13,519	6 1	
December ...	44,190	54,783	24 9	18 10	13,113	5 11	
1919.							
January ...	45,170	55,654	24 3	18 10	13,051	5 9	
February ...	38,160	48,917	25 8	20 1	10,506	5 6	
March ...	42,000	55,131	26 3	20 6	12,005	5 9	
April ...	40,000	52,332	25 10	21 2	10,037	5 0	

LUIPAARDSVLEI ESTATE.

Capital: £472,012.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	18,690	18,962	20 3	21 8	*1,695	1 10	
December ...	19,350	20,122	20 8	21 6	*1,051	1 1	
1919.							
January ...	19,560	21,391	21 10	22 6	*888	0 11	
February ...	18,860	20,950	22 3	22 2	*230	0 3	
March ...	21,000	20,687	19 8	21 6	*2,207	2 1	
April ...	20,000	20,797	20 10	22 3	*1,598	1 7	

* Loss.

MEYER AND CHARLTON.

Capital: £200,000.

Dividends, 1918: 110 per cent.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	13,000	40,298	62 0	24 5	23,832	36 8	
December ...	13,635	39,763	58 0	23 0	23,518	34 6	
1919.							
January ...	12,750	39,178	61 11	25 8	22,545	35 4	
February ...	11,625	33,986	58 6	24 11	19,045	32 9	
March ...	14,000	39,368	56 3	23 3	22,508	32 9	
April ...	13,640	40,082	58 9	23 5	23,510	34 6	

MODDER "B."

Capital: £790,000.

Ore Reserves: 3,378,000 tons 9.2 dwts. Dividends, 1918: 82½ p.c.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	56,300	109,455	38 6	19 8	51,244	18 2	
December ...	57,000	113,423	39 7	20 6	52,703	18 6	
1919.							
January ...	58,000	127,755	44 1	21 7	65,026	22 5	
February ...	48,000	115,691	48 2	22 11	60,342	25 2	
March ...	54,000	124,085	46 0	22 6	63,024	23 4	
April ...	54,000	121,375	44 11	22 3	61,062	22 7	

MODDER DEEP.

Capital: £500,000.

Ore Reserves: 3,450,000 tons 8.8 dwts. Dividends, 1918: 97½ p.c.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	41,000	84,092	41 0	17 8	47,580	23 0	
December ...	40,900	84,577	41 0	18 0	47,515	23 3	
1919.							
January ...	44,400	88,888	40 0	16 11	51,013	23 0	
February ...	39,700	83,128	41 11	16 9	47,148	23 9	
March ...	42,800	89,100	41 8	17 7	51,154	23 11	
April ...	41,100	89,245	43 5	18 1	51,818	25 3	

NEW GOCH.

Capital: £550,000.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	15,200	13,147	16 10	13 8	*990	1 4	
December ...	15,150	13,045	17 0	18 2	*501	0 8	
1919.							
January ...	14,300	13,491	17 10	19 3	*98	0 2	
February ...	12,550	12,684	19 11	21 0	*513	0 10	
March ...	15,500	14,200	17 6	19 0	*641	1 0	
April ...	16,600	13,771	16 0	17 2	*580	0 8	

* Loss.

NEW HERIOT.

Capital: £115,000.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	11,200	15,632	27 11	28 2	*480	0 10	
December ...	11,100	16,439	29 6	27 8	791	1 5	
1919.							
January ...	11,900	15,067	25 4	26 11	*1,128	1 11	
February ...	10,100	14,153	28 0	28 8	*495	1 0	
March ...	11,190	16,813	30 1	27 7	1,167	2 1	
April ...	10,610	14,850	28 0	29 0	*718	1 4	

* Loss.

NEW KLEINFONTEIN.

Capital: £1,300,000.

Ore Reserves: 2,048,000 tons 5.78 dwts.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	46,440	62,217	26 9	27 4	*2,633	1 2	
December ...	47,200	57,569	23 8	25 2	*3,287	1 5	
1919.							
January ...	45,740	57,769	25 3	27 7	*6,145	2 8	
February ...	53,500	64,120	24 0	23 4	712	0 3	
March ...	66,000	77,920	23 7	23 1	598	0 2	
April ...	57,900	72,262	25 0	24 2	1,053	0 4	

* Loss.

NEW MODDERFONTEIN.

Capital: £1,400,000 (£4 shares).

Ore Reserves: 9,000,000 tons 8.6 dwts. Dividends, 1918: 51½ p.c.

1918.	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
November ...	73,000	167,650	45 11	20 3	90,318	24 9	
December ...	70,000	159,370	45 6	20 3	85,062	21 4	
1919.							
January ...	76,000	170,181	44 9	20 3	91,274	24 0	
February ...	78,000	168,843	43 3	19 1	93,173	23 11	
March ...	88,000	185,677	42 2	20 1	95,168	21 7	
April ...	82,000	175,300	42 9	20 3	90,131	22 0	

NEW PRIMROSE.

Capital : £325,000.

Ore Reserves : 65,690 tons 6.1 dwts.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	17,000	15,355	17 5	16 6	1,306	1 6
December ...	17,800	15,993	18 0	16 7	1,208	1 4
1919.						
January ...	17,300	16,345	18 11	17 7	1,138	1 4
February ...	15,600	15,317	19 0	18 1	1,211	1 7
March ...	18,000	16,502	18 4	16 11	1,280	1 5
April ...	19,000	17,161	18 1	16 1	1,017	2 0

NEW UNIFIED.

Capital : £250,000.

Ore Reserves : 1,808,840 tons 6.5 dwts. Dividends, 1918 : 10 p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	12,100	11,800	19 6	15 11	2,167	3 7
December ...	13,100	12,165	18 7	14 10	2,445	3 9
1919.						
January ...	13,400	12,293	18 4	15 1	2,189	3 3
February ...	12,300	11,040	17 11	15 1	1,750	2 10
March ...	13,700	12,318	17 2	15 0	2,060	3 0
April ...	12,000	11,855	19 9	16 8	1,852	3 1

NOURSE MINES.

Capital : £827,821.

Dividends, 1918 : 3½ p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	34,500	45,791	26 7	27 7	*4,288	2 6
December ...	31,200	44,852	28 6	30 5	*3,640	2 4
1919.						
January ...	35,000	50,098	28 8	27 11	561	0 4
February ...	32,600	47,256	28 8	28 5	310	0 2
March ...	40,600	57,442	28 4	26 7	3,175	1 7
April ...	38,100	51,307	28 6	27 6	1,426	0 9

* Loss.

RANDFONTEIN CENTRAL.

Capital : £4,500,000.

Ore Reserves : 1,254,000 tons 6.8 dwts.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	133,000	147,358	22 2	22 11	*5,010	0 9
December ...	118,200	128,363	21 5	23 9	*11,894	2 0
1919.						
January ...	143,000	160,900	22 6	21 4	8,293	1 2
February ...	135,000	153,190	22 5	21 7	7,603	1
March ...	143,000	166,439	23 3	21 9	11,020	1 6
April ...	138,000	162,705	23 7	22 3	9,149	1 1

* Loss.

ROBINSON.

Capital : £2,750,000 (£5 shares).

Dividends, 1918 : 2½ p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	35,000	42,749	24 5	21 7	4,012	2 4
December ...	36,100	44,248	24 6	21 6	4,467	2 6
1919.						
January ...	38,500	45,442	23 7	21 0	4,779	2 6
February ...	35,800	41,857	23 5	20 11	4,135	2 4
March ...	40,000	43,709	21 10	20 0	3,259	1 8
April ...	36,300	42,189	23 3	21 10	2,137	1 2

ROBINSON DEEP.

Capital : 681,807 "B" shares, £1 each, and 500,000 "A" shares, 1s. each.

Ore Reserves : 1,632,000 tons 6.9 dwts. Dividends, 1918 : 23 p.c. per "A" share.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	40,500	54,694	26 11	28 0	*3,139	1 7
December ...	39,400	54,749	27 9	28 0	*1,450	0 9
1919.						
January ...	35,200	51,075	29 0	31 8	*5,351	3 0
February ...	36,000	49,834	27 8	28 1	*1,313	0 9
March ...	44,200	59,693	27 0	25 2	3,250	1 6
April ...	45,300	62,578	27 8	25 2	4,826	2 2

* Loss.

ROODEPOORT UNITED.

Capital : £460,000.

1918.	Tons.	Revenue.		Cost.	Loss.	
		£	s. d.	s. d.	£	s. d.
November ...	24,000	22,275	18 6	22 2	3,867	3 3
December ...	24,000	22,589	17 11	21 1	2,460	2 1
1919.						
January ...	24,000	23,736	19 4	20 8	*966	9 10
February ...	23,309	22,797	19 1	20 7	*1,049	0 11
March ...	25,100	22,088	17 5	20 0	*2,962	2 4
April ...	24,200	23,231	19 0	20 2	*1,081	0 11

* Loss.

ROSE DEEP.

Capital : £700,000.

Ore Reserves : 2,909,520 tons 5.3 dwts. Dividends, 1918 : 17½ p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	46,400	53,823	23 2	19 10	6,779	2 11
December ...	44,290	51,487	23 3	20 2	5,663	2 7
1919.						
January ...	48,000	54,940	22 10	19 6	7,846	3 3
February ...	47,500	55,751	23 6	19 7	8,519	3 7
March ...	54,000	60,505	22 5	18 7	9,570	3 7
April ...	53,000	63,261	23 10	18 6	13,892	5 3

SIMMER AND JACK.

Capital : £3,000,000.

Ore Reserves : 1,538,000 tons 5.6 dwts. Dividend, 1918 : 1¼ p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	48,900	55,985	22 11	20 8	4,497	1 10
December ...	45,700	49,554	21 7	20 6	5,803	2 6
1919.						
January ...	44,100	49,057	22 3	21 2	2,501	1 2
February ...	37,100	42,643	23 0	22 6	2,365	1 3
March ...	44,700	48,059	21 6	22 2	*868	0 5
April ...	46,800	46,589	19 11	21 0	*3,168	1 6

(d) In addition, £4,035 taken from reserve.

(e) In addition, £2,124 taken from reserve.

SIMMER DEEP.

Capital : £1,650,000.

Ore Reserves : 932,000 tons 5.0 dwts.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	42,400	40,460	19 0	22 9	*8,529	4 0
December ...	43,100	48,420	22 6	21 8	911	0 5
1919.						
January ...	43,300	48,135	22 3	22 5	*917	0 5
February ...	37,900	42,622	22 6	23 10	3,109	1 8
March ...	40,600	41,645	20 6	24 2	*7,903	3 11
April ...	38,600	39,309	20 4	25 0	*9,432	4 11

* Loss.

SUB NIGEL.

Capital : £775,000.

Ore Reserves : 387,000 tons 10.3 dwts. Dividends, 1918 : 11½ p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
October ...	9,950	24,191	48 8	32 7	7,517	15 1
November ...	9,100	26,349	57 11	38 2	8,466	18 7
December ...	9,700	25,746	53 1	36 6	7,569	15 7
1919.						
January ...	9,100	26,149	57 6	41 2	7,105	15 7
February ...	8,500	24,399	56 6	37 10	7,956	18 9
March ...	9,400	23,613	50 4	40 1	5,828	12 5

SPRINGS MINES.

Capital : Authorised. £1,500,000; registered, £1,300,000; issued, £1,153,500.

Ore Reserves : 2,256,062 tons 8.69 dwts. Dividends, 1918 : 22½ p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	32,000	72,343	44 6	24 6	32,446	20 3
December ...	28,800	68,108	47 4	25 9	30,200	21 0
1919.						
January ...	33,350	72,450	43 5	25 3	30,287	18 2
February ...	35,300	68,022	38 6	24 3	25,271	14 4
March ...	37,350	71,625	38 4	25 2	23,729	12 8
April ...	34,940	67,721	37 9	25 6	22,771	13 0

TRANSVAAL G.M. ESTATES.

Capital : £604,225.

Dividends, 1918 : 6¼ p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
October ...	13,630	25,482	31 10	25 8	8,107	12 4
November ...	475	3,075	—	—	*5,212	—
December ...	3,550	1,915	27 8	64 1	*6,508	36 8
1919.						
January ...	11,380	14,455	25 5	29 9	*2,780	4 11
February ...	12,850	18,771	29 3	26 9	1,167	1 10
March ...	15,910	25,588	32 2	24 9	5,310	6 8

* Loss.

VAN RYN.

Capital : £500,000.

Dividends, 1918 : 10 p.c.

1918.	Tons.	Revenue.		Cost.	Profit.	
		£	s. d.	s. d.	£	s. d.
November ...	32,000	33,816	20 11	17 7	5,544	3 6
December ...	32,300	32,550	19 10	17 6	4,063	2 6
1919.						
January ...	32,600	32,011	19 6	16 11	4,133	2 6
February ...	31,100	31,599	20 4	17 6	1,110	2 8
March ...	34,000	33,689	19 5	17 0	1,507	2 8
April ...	35,150	33,956	18 7	16 7	4,514	2 7

VAN RYN DEEP.

Capital: £1,196,892.

Ore Reserves: 2,445,759 tons 9.0 dwts. Dividends, 1918: 15 p.c.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
November	42,350	94,932 44 10	21 6	49,469 23 4
December	40,800	94,389 46 3	23 2	47,145 23 1
1919.				
January	42,900	95,748 44 8	22 8	47,179 22 0
February	43,350	94,992 41 5	21 11	47,536 21 11
March	50,000	105,632 42 6	20 10	53,456 21 5
April	47,400	103,560 43 8	21 2	53,288 22 6

VILLAGE DEEP.

Capital: £1,060,671.

Ore Reserves: 2,327,200 tons 6.3 dwts. Dividends, 1918: 3½ p.c.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
November	38,200	53,050 27 9	30 11	*7,164 3 9
December	46,800	65,139 27 7	24 2	6,919 2 11
1919.				
January	48,200	65,886 27 4	25 5	1,262 1 9
February	45,800	59,629 26 0	24 7	2,580 1 2
March	54,000	69,166 25 7	24 6	2,089 0 9
April	43,400	63,176 29 1	27 10	2,129 1 0

* Loss.

VILLAGE MAIN REEF.

Capital: £472,000.

Dividends, 1918: 10 p.c.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
November	19,800	26,548 26 10	22 2	4,029 4 1
December	17,600	25,877 29 4	25 10	2,508 2 10
1919.				
January	18,200	25,729 28 2	25 11	2,424 2 9
February	17,000	21,795 25 8	23 11	1,188 1 5
March	18,700	24,471 25 8	23 8	1,960 2 1
April	17,700	23,239 26 0	24 6	1,216 1 4

WEST RAND CONSOLIDATED.

Capital: £2,001,424.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
November	25,000	26,994 21 6	25 9	*5,162 4 2
December	28,400	32,117 22 6	23 6	*1,395 1 0
1919.				
January	30,500	36,259 23 8	22 11	1,159 0 9
February	28,600	33,362 23 2	23 1	111 0 1
March	32,800	37,886 23 1	22 2	1,295 0 9
April	32,000	38,421 23 9	23 1	1,159 0 9

* Loss.

WITWATERSRAND.

Capital: £475,000; issued, £469,625.

Ore Reserves: 1,390,000 tons 6.0 dwts. Dividends, 1918: 15 p.c.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
November	31,905	35,851 22 9	20 10	3,492 2 3
December	33,321	37,851 22 6	20 3	4,086 2 5
1919.				
January	35,500	38,157 21 2	19 10	2,881 1 7
February	30,750	34,942 22 9	21 1	2,496 1 7
March	35,100	39,376 22 5	19 19	4,523 2 7
April	32,500	40,732 25 1	21 7	5,609 3 5

WITWATERSRAND DEEP.

Capital: £550,000.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
November	28,120	31,454 22 2	26 4	*6,237 4 5
December	26,400	32,644 24 4	26 2	*2,577 1 11
1919.				
January	27,580	35,800 26 0	27 7	*1,958 1 5
February	27,300	32,928 24 1	26 1	*3,102 2 3
March	32,700	37,822 23 2	23 5	*998 0 7
April	30,450	37,049 24 1	24 7	*921 0 7

* Loss.

WOLHUTER.

Capital: £860,000.

Dividends, 1918: 6½ p.c.

	Tons.	Revenue.	Cost.	Profit.
1918.		£ s. d.	£ s. d.	£ s. d.
November	29,270	35,124 24 0	20 7	4,319 2 11
December	27,300	37,308 27 4	22 11	5,278 3 10
1919.				
January	29,250	35,792 24 6	21 5	4,345 3 0
February	26,600	33,625 24 11	27 0	3,970 3 0
March	28,700	36,603 25 6	22 9	3,579 2 6
April	28,500	35,791 25 1	22 7	3,238 2 3

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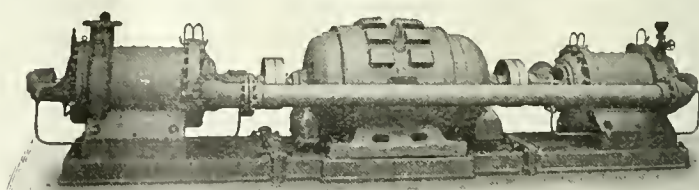
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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Plight of the Low-Grade Mines.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—In view of the alarming outlook for the Rand disinterested people are asking can nothing be done. Take the case of the E.R.P.M., the Cinderella Deep, and the East Rand Extension. The owners of the Cinderella Deep must ask themselves, Can we mine in the future with the E.R.P.M. working full of water over us? The answer must, I think, be in the negative. The East Rand Extension contains payable ore, but scarcely enough to justify putting up a plant. The E.R.P.M. see blank disaster staring them in the face. Cannot rival interests sink differences in view of certain disaster? If they do not, can the Government do nothing to help this matter and to keep the E.R.P.M. mills busy and save Boksburg. Again, surely in view of the fact that the Kimberley reef in this district has been proved to contain areas of payability, cannot the E.R.P.M. make use of their white elephant deep shaft in prospecting it even as a forlorn hope.

ENGINEER.

A Barberton Query.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I am wondering whether any of your readers can give me any information about the Arrastra crushing plant, which, I understand, is used successfully in Australia and Mexico for crushing friable ores. I know nothing of this crusher, and would be glad of any information with regard to size of "pan" and its duty, i.e., the duty according to the size of the pan—in fact, as full details as possible.—Thanking you, I am, yours, etc.,

E. D. RICHARDSON.

Alpine Mine,
Box 103, Barberton.

[An Arrastra is a primitive appliance for crushing ore. Perhaps some of our readers can furnish further details.—Ed.]

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Can you please furnish me with the address of a firm or agent in South Africa who can supply machinery for the manufacture of coir and coco-nut matting?—Thanking you in anticipation,

M. FINCH.

121, Commissioner Street, Boksburg,
Transvaal, 26th May, 1919.

[Perhaps some reader may be able to furnish the desired information.—Ed.]

The Unworked Reefs of the Rand.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Evidently the "correspondent" who writes to your journal asking, "Will Johannesburg last?" and "Will South Africa last?" is not up in the stratigraphy of the Witwatersrand age, nor can he be acquainted with our other two five-mile-thick auriferous ages, viz., the Lydenburg and Black ages, or such an eventuality would never have entered his mind, except, as he says, the present misympathetic Government deliberately cooks its goose. When the mines on Main Reef series are worked out—that is to say, those from Driefontein G.M. Co. to the Princess inclusive—there are plenty of other reefs to the north which are payable, and its own extension, which extends from here to Klerksdorp and beyond, another 150 miles, to say nothing of the Black Reef series which outcrops for the same distance, and which latter to-day is the making of the

Far East Rand we hear so much about. The Van Ryn or Nigel series is a far better series than Main Reef, on which the Rand was started, and the former can be fetched vertically from the outcrop of any Main Reef company at a depth of, say, 3,500 feet for the reason that the outcrop of the Van Ryn is in Jeppes Street, 1,000 yards away. Many Main Reef companies east and west of the town can get it practically at surface if they wished—to wit, the Consolidated Langlaagte, for instance, with unoccupied country ahead of it. Du Preez and many other series of reefs north of Main Reef are still awaiting the diamond drill to prove widths and values at depth. The three highly auriferous geological ages mentioned are unknown in any other part of the world, and they cover South Africa for many thousands of square miles. Odd to say, the Geological Survey of this country, amongst other blunders, have entirely ignored the Black Reef age, and have got it and its dolomites, etc., hopelessly mixed up with the Lydenburg age and its dolomites, and it will take a generation to unravel the tangled skein. Covering all these auriferous ages, including the Schistose, or partly so, comes our Carboniferous age, which also cannot be correlated with any other in the world; and this of itself, together with iron ore, etc., is quite enough to make South Africa last for a thousand years or more unless Nature destroys it, as has happened before to-day, or we should not find our former ages upturned as they are in many places, with shales standing vertical, which the gutter-boy knows full well can only have been laid down horizontally. Volcanic wave action, in my opinion, did the trick, as against the shrinkage theory of Hun geologists taught me at Bonn University in 1864.—I am, etc.,

SCOTT ALEXANDER.

"Rand Stratigraphist."

Johannesburg, May 28, 1919.

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THE WEEK IN THE SHAREMARKET.

A Restricted Market—Holiday Intervene—Rise and Fall of Modder East

There was a very limited market on Saturday, only twelve sales being recorded at the call. Prices were on the whole steady, but African Farms weakened to the extent of 1s. after their recent spurt to 14s. 9d. In the course of the morning Modder Easts hardened, advancing to 21s. 3d. Government Areas were also in good demand up to 95s. 9d.

At the opening on Monday business was confined to active dealings in Modder Easts, with commencing sales at 21s. 6d., thence to 21s. 9d. and 22s. Large dealings went through at the higher figure, after which the stock came sellers at the price. At the call the price fell back to 21s. 9d. and sellers. The options participated in the advance. Government Areas were again firm, as also New State Areas; Van Ryn Deeps easier, the remainder coming unchanged. Business was again limited, only fourteen stocks being dealt in, including Union fives.

The transactions at Tuesday's opening consisted of sales of Modder East at 21s. 6d. and West Springs at 22s. 9d. Dealings at the call were once more reduced from the previous two days' low level. Prices had a downward inclination, with the exceptions of City Deep and Government Areas. Modder Easts were unchanged, but the four-year options came stronger. After the call, Modder East dropped to 21s. 3d. and closed at 20s. 9d.

At the opening on Wednesday, Modder Easts were sold at 20s. 6d. and Mauss Syndicates at 25s. The call was dull and uninteresting. Brakpans and Rand Selections were strong; Van Ryn Deeps also firmer. The low grade strike at the Modder East has evidently disappointed those who eagerly bought the stock up to 22s. on the anticipation of a better return, for a further drop to 20s. 3d. was recorded.

	Thurs., 22nd.	Fri., 23rd.	Mon., 26th.	Tues., 27th.	Wed., 28th.
African Farms	14 0*	13 6*	13 9*	13 7½	13 6*
Apex Mines	7 1*	7 0*	7 0*	7 0*	7 0*
Anora Wests	—	—	7 6*	—	—
Bantjes	2 2*	2 3*	2 4	2 2*	2 2*
Brakpans	64 0*	64 0*	65 0*	—	67 6*
Brick and Potteries	1 0*	—	4 0*	4 0*	—
British South Africa	18 6*	—	—	—	19 6*
Bushveld Tins	1 0*	1 1*	1 1*	1 0*	1 0*
Cinderellas	1 3*	4 0*	4 0*	4 0*	4 0*
City and Suburbans	—	6 3*	6 3*	6 9*	7 0*
City Deeps	51 6*	52 0*	52 6*	54 0	53 0*
Clydesdale Collieries	24 0*	24 0*	24 0*	24 0*	24 0*
Con. Investments	28 0†	—	26 6*	—	—
Con. Langlaagtes	—	17 3*	17 0*	17 6*	17 6*
Con. Main Reefs	9 9	9 9*	9 9*	9 6*	9 7*
Con. Mines Selections	—	23 6	23 0*	22 9*	—
Coronation Freeholds	2 5	2 5	2 6	2 4*	2 1
Coronation Syndicates	—	1 9*	—	—	—
Crown Diamonds	21 6	21 6*	21 6*	21 6	21 9
Daggafonteins	23 3*	23 0*	23 0	22 6	22 6*
Durban Roode Deeps	—	—	—	—	7 0*
East Rand Coals	2 8*	2 7*	2 7*	2 7*	2 9†
East Rand Deeps	0 9*	0 10*	0 10*	0 10*	0 10*
East Rand Minings	18 0†	17 0*	—	18 0†	18 0†
East Rand Props.	6 3	6 4*	6 3*	6 2*	6 3*
Do. Debentures	£64*	£62*	£62*	£62*	£60*
Eastern Golds	1 3*	—	1 0*	1 5†	1 5†
Frank Smith Diamonds	4 4	4 4*	4 6	4 4	4 5
Geduld Props.	19 3*	48 3*	48 0*	—	47 0*
Ginsbergs	1 1*	1 1*	—	1 3*	1 3*
Glencairns	1 0*	1 0*	—	1 0*	—
Glencoe Collieries	—	—	6 0*	6 0*	6 0*
Glynn's Lydenburgs	—	19 0*	19 0*	—	—
Government Areas	95 3	95 3	96 0	95 9	95 6*
J'burg Bd. of Executors	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	4 0†	4 0†	4 0†	3 0*	3 3*
Klerksdorp Props.	1 1*	1 1*	1 1*	—	—
Knight Centrals	7 0	6 9*	6 9*	6 9*	6 9*
Knights Deep	5 0*	5 0*	5 6*	—	—
Lace Props.	—	18 0*	18 0*	19 0†	19 0†
Leeuwpoot Tins	23 9*	23 3*	23 0	22 6*	22 0*
Luipaardsvlei	3 0*	—	—	—	—
Lydenburg Farms	8 7*	8 6*	8 6*	8 6*	—
Meyer and Charltons	—	—	87 6*	—	—
Middelvlei	1 0*	1 0*	—	1 0*	1 0*
Modder B's	162 6*	162 6*	162 6*	162 6*	162 6*
Modder Deeps	155 0*	155 0*	155 0*	152 6*	152 6*
Modder Easts	20 9*	20 9	21 9	21 7½	20 6
Do. Options (3 years)	3 9*	3 3*	3 6*	3 6*	3 1*
Do. Options (4 years)	4 10	4 9*	5 4	5 11	5 0*

	Thurs., 22nd.	Fri., 23rd.	Mon., 26th.	Tues., 27th.	Wed., 28th.
Hume Pipes	—	27 0	—	—	26 6*
Natal Navig. Collieries	—	20 0*	20 0*	20 0*	—
National Banks	£15½*	£15½*	£15½*	£15½†	£15½†
New Boksburgs	1 3*	1 3*	1 3*	1 3*	1 4*
New Eland Diamonds	28 6†	28 6†	—	28 0†	28 6†
New Eras	9 7*	9 6*	9 7½	9 0*	9 8*
New Geduld Deeps	1 7*	4 6*	1 9*	4 7*	4 9*
New Heriots	—	—	10 6†	—	—
New Kleinfonteins	10 0	9 6*	9 6*	9 6*	9 6*
New Modders	£26¾A	£27¼A	£27A	—	—
New Unifeds	4 0†	4 0†	4 0†	4 0†	4 0†
Nigels	5 6*	6 0	—	—	—
Nourse Mines	11 3*	11 6	—	—	—
Premier Preferreds	145 0*	145 0*	145 0*	—	145 0*
Pretoria Cements	68 0*	67 6*	70 0†	67 6*	67 6*
Princesses	—	2 0†	1 9*	1 9*	—
Rand Collieries	3 3*	3 3*	3 3*	3 0*	3 3*
Rand Mines	60 0†	60 0†	—	—	—
Rand Nucleus	1 3*	1 4*	1 1*	1 4*	1 5
Rand Selection Corp.	74 0*	—	75 0	75 6*	76 6*
Randfontein Deeps	4 6*	4 6*	4 6*	4 6	4 6*
Randfontein Estates	14 0*	14 0*	14 0*	—	14 6
Roberts Victors	13 6†	—	13 6†	13 6†	13 0†
Rooibergs	4 1*	4 2*	4 1*	4 1*	4 1*
Roodepoort Uniteds	2 0*	2 0*	—	2 0*	—
Ryan Nigels	3 3*	3 3*	3 3*	—	3 3*
Shebas	1 3*	1 3*	1 3*	1 3*	1 3*
Simmer Deeps	1 6†	1 6†	1 6†	1 6†	1 6*
S.A. Breweries	33 0*	30 0*	33 0*	—	34 0*
S.A. Lands	6 0*	—	5 10*	5 0*	5 10*
Springs Mines	48 3	48 0	47 6*	48 3	48 0
Sub Nigels	19 3	19 3*	19 3*	19 0*	19 0*
Swaziland Tins	20 0†	20 0†	—	20 0†	20 0†
Transvaal Lands	28 0*	28 0*	—	—	—
Trans. G.M. Estates	13 6*	13 3*	13 6	14 0*	13 3*
Van Ryn Deeps	70 3	70 0	69 0*	69 6	70 0*
Van Dyks	3 0†	3 0†	—	3 0†	3 0†
Village Deeps	14 0†	14 0†	—	14 0†	12 0†
West Rand Cons.	—	—	—	—	3 0*
Western Rand Estates	—	1 6*	—	—	—
Wit. Deeps	13 0*	12 6*	13 6†	13 6*	12 6*
Witwatersrands	17 6†	—	17 6†	—	15 6*
Wit. Townships	24 0†	—	24 0†	24 0†	—
Wolluters	1 11*	1 11*	1 11*	1 11*	1 11*
Zaaiplaats Tins	10 0*	10 3*	10 6	10 3	10 0
Union 5 per cent.	—	£102½	£102½	£100½	£102½*
New State Areas	24 3	24 6*	25 0	24 6*	24 0
South Van Ryn	9 0*	8 9	8 9*	8 9*	9 0*
S.A. Alkalis	12 6*	—	10 6*	10 6*	10 6*
Tweefontein Collieries	22 6*	—	—	—	23 6*
Union Corporations	15 6*	15 6*	15 6*	15 9*	15 9*
West Springs	22 6	22 3*	22 3*	22 9*	—
Do. Options	7 0A	8 0A	8 0A	—	—

*Buyers. †Sellers. AOdd lots. BEx London.

Victoria Falls and Transvaal Power.

The net earnings, including those of the Rand Mines Power Supply Co., Ltd., for the quarter ended December 31, 1918, amounted to £210,853 before providing for taxation in South Africa and the United Kingdom.

Municipality of Vereeniging.

NOTICE NO. 27 1919.

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RHODESIAN & BELGIAN CONGO SECTION.

Development at Broken Hill—Proving a Huge Deposit—What the Central Mining Corporation is Doing—Mining Activity in Northern Rhodesia—What's Wrong with Rhodesian Mining?

MR. S. J. SPEAK, consulting engineer to the Rhodesia Broken Hill Development Company, has recently been visiting London. This North Rhodesian copper-zinc property has on two occasions been visited by a representative of the *S.A. Mining and Engineering Journal*, and in previous numbers of this paper extended reference has been made to the property. In view of the work being undertaken there at present it will, however, be of interest to note the position obtaining at the proposition to-day. In a recent issue of the *Bulawayo Chronicle* there appeared an interesting article on this matter. In connection with the work undertaken and carried out by the Rhodesia Lead and Zinc Syndicate, Ltd., at the Rhodesia Broken Hill Mines, the Rhodesia Broken Hill Development Company, it will be remembered, acquired the whole of the share capital of the syndicate and a development policy was adopted with a view to increasing the proved ore reserves at No. 1 Kopje, writes our contemporary. Since then the syndicate has redeemed its debenture issue of £60,000 and has been placed in voluntary liquidation. The lease of the 35 square mile mineral area, which includes the Rhodesia Broken Hill Mines, has reverted to the company, together with the equipment, including the two lead smelting furnaces erected by the syndicate, all machinery, plant, buildings, stores, etc., and all profits now being earned will also accrue to the company. The syndicate produced 15,383 tons of lead from the 1st April, 1916, up to the 28th February, 1919. The Central Mining and Investment Corporation, Ltd., having undertaken to carry out certain prospecting work at No. 1 Kopje, sank a series of boreholes, the results of which have led their technical staff to estimate the ore contents of No. 1 Kopje at 100,000 tons of metallic lead and in addition they estimate that 25,000 tons of metallic zinc occur as sulphide.

No. 2 Kopje, at which no new development work has been carried out, is estimated to contain to water level about 300,000 tons of 32 per cent. zinc ore. In a recent review of the position on the results of the boreholes put down near No. 1 Kopje, Messrs. Hooper, Speak & Co., the company's consulting engineers, state that they are of opinion that there is evidence of the probable existence of considerably larger tonnages of metal than the estimate given above, and that the company is warranted in proceeding on the supposition that the proposition is one of much large magnitude, and they add: "We submit that the company is warranted in increasing its production of lead, and in undertaking considerable expenditure in the preliminary development of a zinc industry." The consulting engineers also attach much importance to prospecting and geological work and advise considerable expenditure thereon, in the belief that the existence of further considerable tonnages of lead and zinc ores will be demonstrated. Under these circumstances an additional smelter has been ordered and it is anticipated that it will be in operation by the end of the present year, when the output should be increased to 1,500 tons of metallic lead per month. The whole of this year's output of lead has been sold. Additional pumping equipment has been purchased and installed, and arrangements made for the adoption of the Francois cementation process in order to deal with water encountered in the country surrounding the deposit, which has impeded the sinking of the new main shaft. The results so far reported are favourable.

With regard to the financial arrangements the Central Mining and Investment Corporation, Ltd., and others have

exercised the options they held on unissued shares of the company, subject to the consent of H.M. Treasury being obtained. The importance of the production of lead and zinc within the Empire has been clearly demonstrated during the war and (as is stated in a circular issued by the secretary of the company) it is considered that this is a case for the favourable consideration of the Committee on Fresh Leases, as not only would production be increased to the advantage of the industries more or less dependent on a supply of these metals, but the Exchequer would also benefit from the profits which would result from the increased production. In connection with the foregoing, we learn that the output for last month from the two smelters was 1,202 long tons of metallic lead; a record month. The increased output is mainly due to the fact that the ore is becoming richer as the ore body goes down. With regard to the water, which has been one of the difficulties, the additional pumping equipment mentioned has been sufficient to control the water, and the staff are able to go down on the ore body. As a result of Mr. Speak's visit and the way he has been going into the question of the treatment of the zinc ore, extensive experiments are to be carried out which will, it is hoped, eventually result in a big treatment plant being erected for the zinc. The prospecting work already referred to is also being carried out and has already definitely proved the existence of extensions of the ore body, which will considerably increase the tonnage.

What is wrong with Rhodesian mining? The *Bulawayo Chronicle* contains an interesting article on this subject, in the course of which it is stated that the depression which has been evident in Rhodesian mining for some time past and from which we are beginning to emerge, has been severely felt in most other countries, except those like Burma, which are essentially producers of "munition" metals. In England itself depression has come with the cessation of hostilities, but the situation throughout the Empire is receiving even more attention. The Government, complains the *Mining Journal*, in summarising the position, refuses to allow the export of gold, so as to permit the producer to obtain its value as a commodity, but at the same time will do nothing to assist the increased output which it desiderates. The tin industry reels from the effect of Government action. The zinc smelters to-day will await the fruits of the great Government purchases of supplies. Ore supplies are short. The tungsten industry is threatened with a shut-down. As regards the future, the Excess Profits Tax and the embargo on the investment of capital abroad are heavy blows at our future supplies, already jeopardised by five years' cessation of new enterprise. In a word, the whole question of what steps Government is going to take to assist mining and ore reduction, which have made extraordinary efforts to meet the strain of war, is one of the most serious of the problems before us, if a grave set-back to our world's position is to be avoided. In the United States, where the effort has been far less severe, and where fantastic profits were made in 1915 and 1916, the Government has already passed a relief Bill for "war minerals," appropriating 8,500,000 dollars for compensating losses caused to those who met the call of the State by making special outlay to produce what was demanded of them. Various branches of the mining industry have at one time or another been called upon to save the Empire; it rests with the War Cabinet to recognise that coal is not the only mineral which demands from them in their turn a constructive, coherent and resolute policy.

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Mr. J. F. E. Barnes, at one time of the Public Works Department of Natal, advocates the adoption of profits sharing in public and other works. He instances in particular the construction of a well-known road in Zululand. A normal standard was adopted of yards forward, and at the end of the month anything beyond the standard was paid in extra, all hands, skilled and unskilled, whites and blacks, sharing in the bonus. All breakages, delays and stoppages ceased, and not only did the workers earn more, but the work came out cheaper than under the usual system. Mr. Barnes states that in his subsequent years of farming he adopted the same principle with success and all-round satisfaction.

Government has declared its intention to establish a mint, and the question of profits has been raised. These profits are earned chiefly on the coinage of silver and bronze. For ten years ended June 30, 1918, the total issues of silver and bronze money by the Australian mints reached in value £3,360,945, of which £273,553 was issued to replace British silver coin withdrawn. The total was made up of £1,590,650 in florins, £1,098,700 in shillings, £274,700 in sixpences, £264,075 in threepences, £93,491 in pence, and £29,330 in halfpence. The gross profit made by the Australian Mint for coin issue in 1917-18 was £209,951 for silver and £19,426 for bronze. There was a further profit on silver and bronze money coined but not issued amounting to £14,000.

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ENGINEERING SECTION.

HAMMER DRILLS—THEIR HISTORY, DESIGN AND OPERATION.—II

[By HENRY S. POTTER.]*

Slide 6 illustrates the assembly of the Kimman machine. It will be noticed that the throttle control was by means of a rotary grip handle, the handle on the left-hand side being to steady the machine.

Slide 7.—With this we start what one might call the more modern type of Jackhammer drill. This slide illustrates the Flottmann machine. The features of this machine are fairly well known to members, the novel construction being the use of the ball valve, and the rotation consisting of four straight flutes engaging the ribs in the drill chuck with four incline flutes engaging corresponding ribs in the interior of the ratchet wheel.

Slide 9 illustrates the N.H. type Siskol. The valve in this machine is the washer type, the rotation being similar to that used in the Flottmann, Slide 7, except that the incline flutes and ratchet gear is arranged at the back of the piston head; the piston structure being solid, that is, it is not bored out to take any rifle bar mechanism. A large number of these machines were installed on the Witwatersrand, and, I believe, gave excellent results. See Figure C.

Slide 10 illustrates the Meyer, the upper view illustrating the valved type and the lower the valveless type of machine. I do not think any of these machines have been installed on the Witwatersrand, though they have been tested. The lower figure is somewhat similar to the Francois (Thunder-

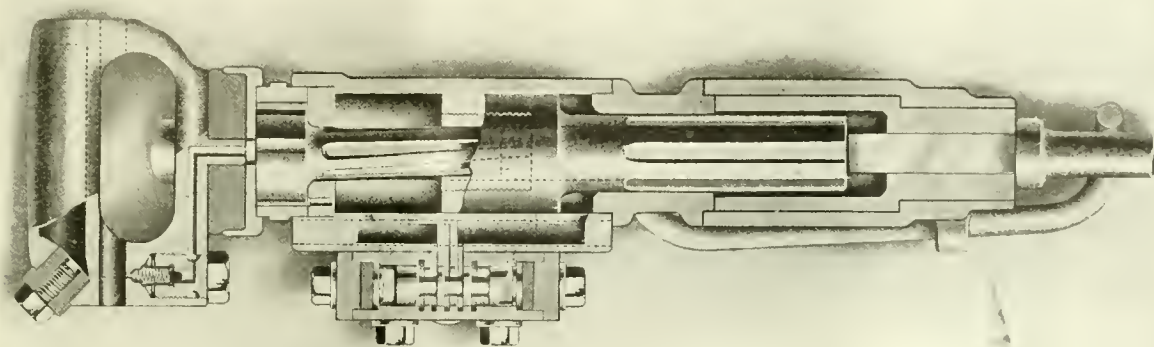


FIG. B.—HOLMAN JACKHAMMER (HAND TYPE).

Characteristics: All-steel construction; spool double-ported valve; rifle bar automatic rotation at rear of cylinder; oiler in grip handle; chuck takes square shank hollow steel.

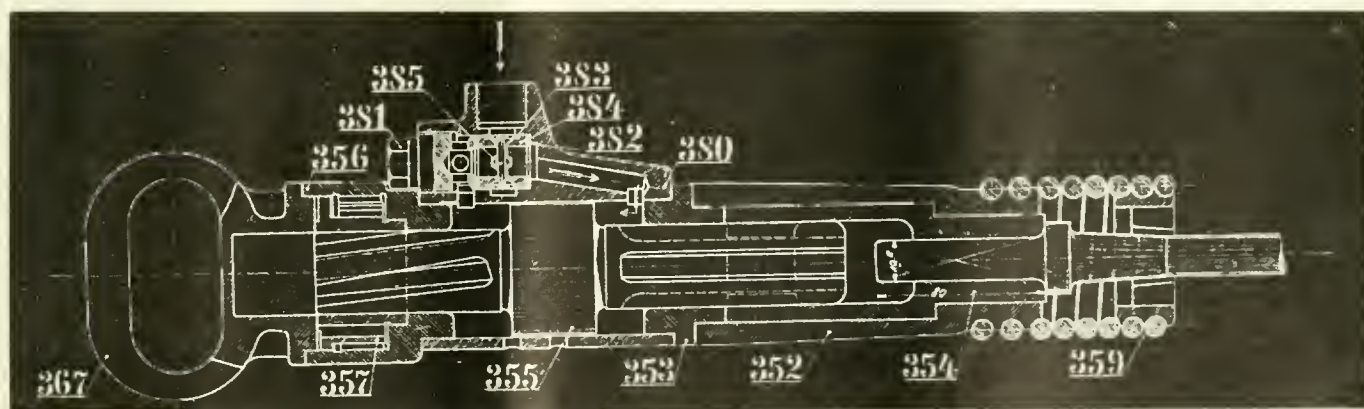


FIG. C.—SISKOL JACKHAMMER DRILL.

Characteristics: Washer valve; solid piston structure similar to Flottmann and "Meco," but rotation arranged at rear of piston; chuck designed for square shank hollow steel.

Slide 8 illustrates a machine which was at one time used to a considerable extent on the Witwatersrand for drilling pop-holes and is known as the Boyer Plug Drill. The rotation is similar to that used in the New Schmucker, Slide 3. These machines did fairly good work for holes up to 12in. or 14in. deep, but were too delicate in the general assembly and structure to stand underground conditions.

*Paper read before the South African Institution of Engineers.

bolt), with which some experiments were made on the reef some five years ago.

Slide 11 illustrates the machine known as the "Meco." This slide does not actually illustrate the Hammer Drill, as the valve is shown embodied in the design of a reciprocating machine. The valve is of the flap type operated by compression. The cycle of its operation is similar to that shown in Slides 7, 9 and 10. The lower figure is rather interesting

as in this design it is very similar to the Butterfly valve, as used by the Ingersoll Rand Company, but the flap only controls the admittance of air to either end of the cylinder. A block of this machine is included in the text. Figure D.

Slide 12 is only introduced into this paper to illustrate one of the first machines which was made in which the stroke was longer than the length of the piston, and it also has the feature of being one of the first machines fitted with double valves. This machine is known as the Boyer double valve long stroke hammer. The valves are arranged at either end of the cylinder and are connected by means of rods so that when one valve moves the other moves with it. The valves are moved by a slight compression formed in front or at the rear end of the piston in its stroke. This machine was also fitted with a safety device so that the machine could not operate until the snap was pushed up to its work. The date of this machine was about 1900.

Slide 13 illustrates the well-known Boyer Chipping Hammer, and for anyone who is interested in Hammer Drills the patent covering this machine is well worth serious study, as this machine was really one of the first successful pneumatic hammers to come on to the market, and Boyer, in his patent, clearly describes the means by which a piston operates in conjunction with air thrown valves. This hammer was invented in 1896, and is made at the present moment in almost exactly the same proportions as the first machine made by the inventor.

Slide 14 is an illustration of Tierney's rotation device. The slide clearly illustrates the construction which consists of a small pair of rotary motors connected by worm and worm gear to the chuck.

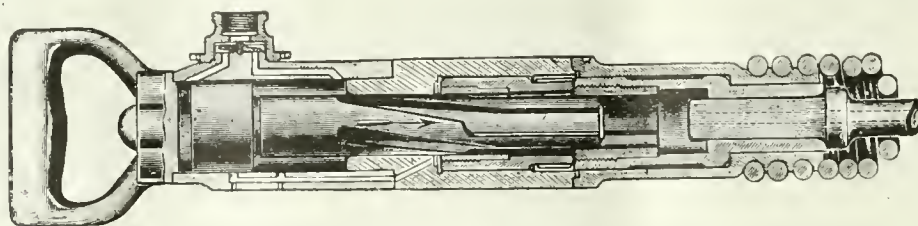


FIG. D.—“MECO” JACKHAMMER DRILL.

Characteristics: All-steel construction; use of flap valve arranged in inlet connection, making it very easy to assemble and take apart for inspection; automatic rotation gear arranged at front end of cylinder somewhat similar to Flottmann; chuck fitted for square shank hollow steel.

Slide 15 illustrates the valve mechanism of the well-known Waugh Drill. I think this particular valve was used in the 8a and 8c types. The valve is of the differential type and is moved by compression. A great many of our members will recollect that this machine did a good deal of pioneer work from about '07 in what is known as the air-feed type of machine.

Slide 16 illustrates the shell riveting hammer invented by Gunnell in '02. This machine embodies some of the features of the 16 V Waugh and C.C. 12 Ingersoll, and also the Konomax Reciprocating Machine, in the fact that the piston is of two diameters, the rearward smaller diameter being subject to constant pressure. The air acts on the forward larger area to return the piston after striking its blow, the control of air to this last-mentioned area being by means of a valve moved by contact with the piston. I wish to also add that Gunnell was one of the first inventors to use an air feed with this type of machine.

Slide 17 (C. H. Johnson, '03) is a machine similar in its cycle of operation to that of the Gunnell except that it is valveless.

Slide 18 illustrates Bayles patent, showing a semi-valveless machine similar to the 16 V Waugh, but with the modification of a small valve for delaying the time of admittance of air to the front end of the cylinder, and also to ensure of a later cut-off on the return stroke of the piston, thus increasing the mean effective pressure acting on the low pressure head to return the piston. This type of machine has come into considerable use during the last four to five

years, owing to simplicity of design and the powerful blow which is obtained. This type is generally embodied in connection with the air feed or cradle type of machine because if used as a machine adapted to be held in the hand of the operator, the reaction of the air pressure on the high pressure head reacts on the operator, thus necessitating some form of spring handle.

Slide 19 illustrates the Denver Clipper Machine. The cycle of operation is similar to that of the 16 V Waugh except that the constant pressure area is arranged as a chamber inside the piston head. I do not propose describing how this machine operates, because the drawing is perfectly clear, and most of the members are conversant with this machine. See block in text illustrating the larger size Dreadnought m/c. Figure M.

Slide 20 illustrates the Little Hammer Machine as made by the Chicago Pneumatic Tool Company. The particular feature of this machine is the use of a rotary motor for rotating the chuck. The exhaust air from this rotary motor afterwards passes through the valve, as shown in the right-hand figure, operating the piston. I believe this machine has been tried on the Witwatersrand, but I am not acquainted with the results obtained. Generally speaking, I have found that in machines such as this in which the rotation is not synchronised with the blow, difficulty is obtained in getting the cutting edges of the steel to stand up, especially in hard ground.

With reference to the three following figures, I do not know whether these devices were ever put on the market

Slide 21 illustrates a rotation device of the Ingersoll Sergeant Company. It consists of a device for rotating the chuck by means of ports leading from the cylinder to the ends of a wedge-shaped piston head, the interior being fitted with pawls engaging the ratchet teeth on the chuck body.

Slide 22 is an oscillating device. It consists of a cross piston fitted with a rack which engages the pinion fastened to the air feed piston rod.

Slide 23 illustrates a machine invented by Bayles, which is of interest as showing another type of rotation by means of a pinion and gear wheel. The pinion is rotated by means of a small auxiliary piston arranged at the side of the main hammer drill piston, the rotation being obtained by means of a rifle bar and ratchet mechanism fitted to the auxiliary piston.

(To be continued.)

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THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

More Hopeful Feeling—Cheapest Worked Mines—Straws Breaking the Camel's Back—Oils and Colours—Iron and Steel—Building Materials—Electrical Tubing Scarce—Co-operative Societies—Commercial Exchange and the Middleman.

THE big feature of the week has been the telegrams from the Chamber of Mines to the Government in reference to the various points raised in connection with the controversy as to why the poorer grade mines are likely to close down. So far the rather sharp telegrams seem to be doing good, as there is a much more hopeful feeling in business circles that the Government will do something. The Acting Premier has telegraphed London in reference to the large surplus in connection with the Insurance Fund for gold despatched during the war, none of which was lost; therefore all the insurance money is obviously to the good, save a little management charges. Through all this criticism in Parliament and a few admissions already made by the Government, there is, as before remarked, a more hopeful feeling in town; in fact some quotations are a little higher and a few are erratic in consequence of the quantities of goods, more particularly oils and such like, having come through of late very freely, but no doubt this coming month will finish all the belated orders given before the armistice both to America and Britain. Another feature, and hardly a lesser one than the poorer mine controversy, is that several chairmen at the annual meetings recently have referred to the cost of stores, and further they have stated that several boards have under consideration a new plan of purchasing under a co-operative method, presumably very much after the style of the Rand Mines, who have one buyer for the whole of that group. A leading merchant, who often volunteers information, recognises that the mines must of necessity look after themselves, especially from an economic point of view; therefore he thinks it probable that many new plans may eventually come into operation when the least inkling is shown that costs can be made less. New ideas will be encouraged both from a distributing and manufacturing point of view; in other words, the lower-grade mines problem will do all that is possible to make the working costs less, so that much ore that is shelved for the time being will again become payable. The war period has taught many a lesson in this respect and the greatest economy has been practised upon the mines in stores, and perhaps more has been done in preventing leakages.

THE GOVERNMENT'S "BIG HAND."

The Glencairn meeting is quite an interesting one. The chairman remarked that he would like to convey the directors' appreciation of the loyalty and hearty co-operation displayed by every grade of employees, as a result of which the Glencairn was the cheapest worked mine on the Rand. He also said that the work of dismantling and selling the plant is being proceeded with; practically the whole of the saleable mine stores, with the exception of those required for the slime treatment, have been disposed of, and certain of the buildings and plant have been sold. The remainder of the equipment will be disposed of as opportunity offers. Notwithstanding that this was the cheapest worked mine on the Rand, through the hearty goodwill of the workmen, the Government comes in with a big hand. Here is what the chairman said: "The value of the gold recovered left a profit of £2,880 for the year. Of this amount a benevolent Government taxed us to the extent of £2,149 because the company paid a dividend of 5 per cent. as a return to the shareholders from the result of three years' operations"—which is one of the straws which is now breaking the camel's back.

OILS AND COLOURS.

It is still very difficult to give anything like solid quotations, as, for example, white lead has been offered in large parcels at 67s. 6d., whilst the usual price is 72s. 6d. per 100 lbs. Linseed oil is about 11s. per imperial gallon to retailers as compared to the wholesale price in London of 42s. per four gallons. It is said that the best boiled linseed oil costs £5 a case to be landed from London into Johannesburg. Turpentine is a little firmer at 70s. for two 4's and 75s. for ten 1's; also 77s. 6d. has been paid for single cases. Olive oil, 27s. 6d. to 30s. per imperial gallon; this is not coming forward at all freely. American best salad oil is only nominal at 130s. a case, but shipments are expected shortly, which will relieve the present acute shortage. South American salad, 120s.; South African nut, 65s. to 70s.; castor oil (medicinal) is exceptionally scarce at 105s.; ditto, ordinary, 70s. to 75s. two 4's.; engine oils, good average, 40s. to 42s. 6d.; cylinder oils, 40s. to 42s. 6d. Business has been remarkably good throughout the month for all kinds of paint. The ingredients for making the best paints in Johannesburg equal 1s. 2d. a lb., to say nothing of the tins and labour; therefore 1s. 6d. a lb. retail does not seem extravagant. However, there are paints being sold at 1s. 3d. a lb. The demand for mixed paints is ever on the increase, as it is difficult to mix the ingredients without the aid of machinery, and in Johannesburg the best class of machinery is used by the mixing firms here. Plate and sheet glass are in plenty, and now many of the business premises are in the finishing stages, there is an excellent demand.

IRON, STEEL AND MACHINERY.

There have been some big deals in imported bar iron at 37s. 6d. per 100 lbs. in 10 ton lots. The demand for Transvaal iron still continues excellent, more particularly for the Reef, the Natal coal fields, Southern Rhodesia and the Belgian Congo. The difficulty about some kinds of iron, more especially outside sizes, is that if one is offered 40s. to-day, it is problematical as to the price on the morrow—very often not more than 30s. will be bid. This difference in prices is accounted for by the quantity of belated orders in America coming through very quickly of late. All kinds of piping are easier, as quantities are still held by speculators. The demand from foundries is not quite so good, as orders on hand after the moulders' strike are being overtaken; therefore workmen in some firms are encouraged to take their annual holiday.

TIMBER, ROOFING IRON AND BUILDING MATERIALS.

Building has been very good this month so far, but it is now slackening off as the orders given immediately after the strike have mostly been overtaken, but of course there is much to do from day to day keeping up current work. The inclination for timber is to fractionally advance on the Baltic news, but as previously remarked they are evidently waiting till the peace is signed. The price of deals is 1s. 5½d. to 1s. 6½d.; floorings, 8½d. to 8½d.; ceilings, 6d. to 6½d.; roofing iron, 24-gauge, 1s. 3d. up to 10 feet, and above 10 feet 1s. 3½d. Business has been pretty brisk in second-hand timber and iron this past week; prices are hardening, but materials are very scarce, in fact the market is practically bare of stocks. There are plenty of enquiries, but under the circumstances the desire which might induce buyers

to go in for current business is checked by the fear that a considerable drop in prices might occur after clenching such transactions, which was summarised by one merchant as not particularly good business in spite of the apparent buoyancy of the market. **Bricks.**—In this connection no alteration in prices is to be recorded during the past week. The demand is fairly good, but labour still remains scarce, particularly of bricklayers, plasterers, etc.

ELECTRICAL MATERIAL.

The market for electrical goods remains practically unchanged, and prices are much about the same. Everything in connection with this market is satisfactory with the exception of tubing, which is still very scarce and the price is still holding up. It seems that the raw material for tubing (of which steel of course forms an important part) is not too plentiful at Home, and although very large consignments are now on the water for Johannesburg, they have up to now not materialised, so that the price of tubing is not likely to recede just yet. As regards country business, Kimberley, as stated recently, is still importing from this centre pretty freely, and indeed the coast (particularly East London) may also be said to be doing a pretty fair import trade with us in respect of electrical materials, which is to say the least an anomalous state of affairs. In the meantime contracts, of which there is a fair number in hand, are still being held up to a great extent for want of tubing.

CO-OPERATIVE SOCIETIES.

The Minister of Finance, in reply to a question if he could give assistance from the Land Bank to co-operative stores for working men, replied pointing out the difference between the advances to those who had land as security and to co-operative societies, therefore he could hold out no hope this session of direct assistance to these societies. In such a cosmopolitan community as this an ordinary food distributing co-operative society is not a promising venture. This is borne out by the report of the Cost of Living Commission, which, however, is an inconclusive document. It is

admitted there that the ordinary grocery and provision man did not profiteer, because of the acute competition in food-stuffs. No doubt the Commission in question earned its money by having a salutary check upon merchants and retailers in the acute stages of the war. Now in Lancashire where the factory hands are crowded together a co-operative society has a fair chance because there is cohesion amongst the workers, but here the mining community is scattered and the races are very much mixed. All this, however, is not of such consequence as the proper running of the society itself.

COMMERCIAL EXCHANGE.

Business has touched bottom, as the mines are purchasing a little more freely out of necessity, as some of their reserve stocks are here and there running out, so they are compelled to replenish. The smaller men are getting anxious for their future, as many of the middlemen are expected to be crowded out in the strenuous competition ahead, as the direct representatives of the manufacturers carrying stocks in Johannesburg will do most of the business. This is mentioned because it is a very real matter to-day, brought up more especially owing to the big controversy over the poorer grade mines. For example, there have recently started three sets of syndicators on the Western Rand, where it is said they are making a living and a little over, as they are relieved from the heavy establishment charges and all the regulations of the trade unionists. The bulk of the business is now being done with the outside gold mining propositions and particularly with the base metals, as well as the railways, municipalities and Government departments. Quotations are erratic in the extreme, as the recent arrivals from America and Canada, as well as Britain in a lesser degree, have in some lines flooded the markets, and a few holders have been compelled to realise to keep their bank managers in a good humour.

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Company Meetings.

SPRINGS MINES.

There was an exceptionally large attendance of shareholders at the annual meeting of Springs Mines, Ltd., at noon on May 23rd in the Board Room, Corner House. There were 622,011 shares represented. Proxies had been sent by 257 shareholders, representing 372,274 shares.

CHAIRMAN'S SPEECH.

The Chairman, in moving the adoption of the report and accounts, said that in order to be prepared for the issue of the new shares contemplated in the Mineral Lease, the registered capital of the company was increased from £1,000,000 to £1,300,000 in shares of £1 each, and 153,500 new shares were issued during 1918 at £3 each. Of the proceeds, £309,750 has been allocated to shaft sinking and preliminary development of the lease area, and £150,750 to redemption of debenture debt. At the end of the year the balance of debentures outstanding was £138,830, and since then debentures of the nominal value of £365 had been purchased. It was proposed to follow this course until the balance of the issue was either purchased or drawn for redemption. The property holdings of the company were increased during the year by the purchase of twenty freehold stands in Springs Township, upon which cottages for married mine employees had been erected. The directors had approved of a scheme under which mine employees may acquire the ownership of these cottages on reasonable terms, payment of the purchase price being extended over a period of years.

Financial Points.

The profit on the year's operations was £123,695, which amount was reduced by additional war charges on gold realisation, donations, interest, commission, etc., to £402,191. To this figure must be added the unappropriated profit carried forward from 1917, amounting to £214,954, which made a total of £617,145. Against this sum the following amounts had been appropriated: Government taxes, £47,930; Government's participation in profits, £14,413; Development Suspense Account, £85,759; dividends Nos. 1 and 2, £259,188; total, £107,290, leaving an unappropriated balance at the end of the year of £209,855.

The shortage of native labour had a serious effect on operations during the last few months of the year, it being estimated that the tonnage crushed was adversely affected to the extent of 25,000 tons, with a consequent lowering of profit by about £27,000. Pending an appeal against the judgment, payment of the Provincial tax would have to be made, but only on condition that the Provincial Council provided adequate security for repayment in the event of the appeal being upheld.

After an explanation in regard to the amount appropriated for development, the Chairman said that although the unappropriated profit at the end of the year stood at £209,855, after providing for the payment of the two dividends declared, the cash position of the company was not so favourable as to enable the dividends to be paid without having to borrow money to do so. The reason for this was that capital expenditure on the original equipment exceeded the funds provided by £349,522 10s., and in addition the cost of stores on hand and in transit totalled £139,637, an amount at least £100,000 in excess of the sum which would have been invested

under pre-war conditions. Seeing that shareholders had not received any return on their investment since the company was formed, and as large profits had been made, the directors came to the conclusion that it was only reasonable that present shareholders should receive some distribution, instead of the balance of expenditure on original equipment being immediately liquidated out of profits. It was therefore decided to make the distributions previously mentioned, and utilise a portion of the profits of the next few years to liquidate the indebtedness. The amount of money invested in stores would be gradually reduced as opportunity offered, and the directors had under consideration a scheme whereby all stores required by the group would, as far as possible, be purchased in quantities on the co-operative system.

Year's Development.

The footage accomplished during the year totalled 17,890 feet, of which 12,899 feet were on reef, and averaged 17.80 dwts. over 22.90 inches. Of the footage sampled, 7,700 feet were classed as payable, the value being 20.83 dwts. over 30.34 inches, equal to 632 inch dwts. The value of the ore disclosed was above the average of all development in the mine to the end of 1918, namely, 610 inch dwts., and the percentage of payability had only been exceeded once, viz., in 1913, when the percentage was 60, as compared with 59.5 last year. An analysis of the total development from the commencement of operations gave 52.43 per cent. of the footage sampled as payable.

The ore reserve at the end of the year was estimated at 2,368,000 tons, of an average assay value of 9.3 dwts. over an average stoping width of 61 inches. This showed a reduction of 199,000 tons and a drop in value of 0.5 dwt. as compared with the quantity and value at the end of 1917. The decrease in tonnage was not due to the development results for the year, but due to the elimination of ore which, as stoping progressed, was found to be below the present pay limit. The reduction in the grade of the ore reserve was liable to give a wrong impression. The value of the present reserve was calculated over a three-inch greater stoping width than that of year ago, and intrinsically therefore the two estimates were practically the same. The average yield of the present ore reserve was estimated at from 38s. to 42s. per ton milled, these figures being based upon the maximum and minimum percentages of ore drawn from development faces and other sources, combined with its value. The total footage accomplished during the year was adversely affected by the influenza epidemic during the last quarter of the year, and this had some bearing on the ore reserve.

The tonnage milled for the year totalled 427,610 tons, an increase of 114,543 over the previous year. This was due to the extension of the reduction plant early in the year. In the middle of 1918, when the ore reserve was recalculated, the consulting engineer estimated that the average yield from the reserve would be between 40s. and 41s. per ton milled. In actual practice the average yield for the year was 42s. 4.4d. This yield was higher than the 1917 grade by 3s. 4.4d. per ton. Working costs averaged 22s. 6.6d., an increase—due to war condition—of 5.4d. per ton, and the profit per ton milled was returned at 19s. 9.8d. These figures were of little use for comparative purposes, because during 1917 certain

important factors, such as absorption of gold in the plant and inclusion of low-grade ore from the dump, adversely affected the grade.

In the Lease Area.

The sinking of the No. 3 shaft in the lease area was progressing, the depth at the end of the year being 444 feet. Since the end of the year a further 740 feet of sinking has been accomplished, the depth now being 1,184 feet. As the reef in the lower section of the mine was rising towards the south-west, it was anticipated that it would be struck at an earlier date than was originally estimated, although it would be unwise to hazard a guess at this moment as to the probable depth at which the reef would be exposed in the shaft. Although the values disclosed in development in April were not so good as those for the first quarter of the year, the percentage of payability showed a considerable improvement. The very good values disclosed in the east haulage from the south shaft—a virgin area of the mine—were continuing.

During the influenza epidemic over 4,000 of the mine natives were sufferers, with a consequent wastage and replacement. Anyone with a knowledge of underground conditions would appreciate, not only the disorganisation caused by the exchange of trained for raw natives, but also the extra cost involved in having to pay the same rate of wages for much less efficient work. During March, when the usual monthly examination of the mine returns was made, it was found that several of the stopes had fallen in value, resulting in reduced profits.

Mr. Davis's Report.

Owing to certain changes in the management of the mines comprising the Consolidated Mines Selection Group, Mr. Carl R. Davis was unable to take up his duties as Consulting Engineer until April 28th. Immediately upon doing so he commenced an investigation into the conditions of Springs Mines. Mr. Davis' report was received on May 12th and circulated to shareholders on the evening of the 13th. In dealing generally with the position of the mine Mr. Davis made special mention of several outstanding points. For instance, he stated that, after allowing for the difference in the slope width, the value of the ore reserve as at the 31st December—based upon data available at the 28th February—showed a reduction of 0.3 dwt. per ton, while the reserve tonnage showed a decrease of 145,600 tons. In view of the fall in value of the slope faces during the three months, and having regard to the personal equation, the recalculation may be said to confirm the original estimate. As a matter of fact, it was only fair to assume that if the ore reserve had been recalculated as at the end of April—instead of the end of February—the reconciliation would have been even closer. His (the Chairman's) reasons for this view were, firstly, that the April sampling results of the stopes in the ore reserves showed an improvement of over 1 dwt. as compared with March, and secondly, that as development proceeded, the information concerning some of the eliminated blocks showed a more favourable tendency, and a portion of the tonnage which had been thrown out would have been re-included. There was an explanation he would like to make with regard to the unavailable ore reserve. Several shareholders pointed out that they read the report to mean that all, or

practically all, the unavailable ore was in the shaft and haulage pillars; this, as most of them had no doubt seen from a subsequent notice in the Press, was not a correct interpretation. There were 65,000 tons in the shaft pillars, 325,000 in the haulage way and 727,000 tons in blocks which were being opened up as quickly as circumstances permit. The ore in the haulage pillars would gradually become available as operations continue. It would be noticed that at the end of the year the value of the available tonnage was 8.81 dwts. as compared with 9.76 dwts for the unavailable tonnage. The yield showed a reduction from between 38s. and 42s. under the first calculation for this year to between 35s. 3d. and 39s. 4d in the new estimate.

Mines Lay Out.

The report made it quite clear that in the opinion of the new consulting engineer, the lay out of the mine was eminently suited to the conditions. The winding capacity of No. 2 shaft was ample to meet requirements, nothing so far disclosed went to indicate that future development should be of less value than that portion of the mine already opened up, and the prospects for the development of a large amount of payable tonnage were most promising. The adverse features were the shortage of stope faces, transport difficulties, and the fall in grade. To sum up the position—as he (the chairman) saw it—transport and subsidiary development, which included shortage of stope faces, were their main difficulties, and these factors (for which the shortage of compressor power was to some extent responsible), were having immediate and continuous attention. With regard to the yield, that, as he had already explained, was showing improvement, and in his opinion the possibilities of the mine showed no alteration now as compared with its prospects when they tendered for the lease area.

Before concluding he would like once more to assure shareholders that the granting of facilities to West Springs had not in any way interfered with operations. There was only one haulage way at present extended into the West Springs Area, and the total amount of ore dealt with during the past seven months from this area was 4,618 tons, of which 1,722 tons were sent to the mill and the balance, 2,896 tons—equal to 400 tons a month—sent to the No. 1 shaft for dumping. He was pleased to say that the latest development in the adjoining area was in payable ground, the value being over 400 inch-dwts. It was hoped that a new ore shoot was now being entered into, and if so, it was naturally to be expected that, owing to the trend of the shoots being from the north-west to the south-east, they would encounter it in the western section of the mine.

They were continuing the payment of allowances to employees still on active service, and their dependents, the amount involved during 1918 being £3,029. At the end of the year 38 of the company's employees were on active service in Europe or East Africa, and he deeply regretted to say that since the last meeting five men, whose names were given in the directors' report, were reported killed or died, thus bringing the number of the employees who had made the great sacrifice during the war to six. During the year, Mr. W. E. Hudson, who was one of the solicitors of the company from its inception until last year, was appointed to a seat on the directorate. You will be asked to confirm this appointment. In March of this year Mr. C. E. Knecht resigned his appointment as Consulting Engineer to the Consolidated Mines Selection Group, and Mr. Carl R. Davis, the general manager of Brakpan Mines, was appointed to succeed him. A change had also taken place in the management

of your company's mine, Mr. B. D. Bushell having accepted the management of Daggafontein Mines, and Mr. A. A. Coaton having been appointed manager in his place. Finally he desired to express the directors' appreciation of the services rendered by the technical advisers and the mine and head office staffs. Thanks are also due to Mr. C. B. Brodigan, who acted as manager of your mine for several months during the absence of Mr. Bushell on long leave.

Mr. Saunders seconded the adoption of the reports and accounts.

Directors and Reports.

Mr. W. M. Bielski, though expressing pleasure at the consulting engineer's opinion that the company would gradually get back to a normal position, thought the time had arrived for plain speaking. He had no wish to be abusive, but confine himself to fair criticism. He could not conceive how directors of the company—representatives of groups who had made a success of the administration of other companies—could have allowed such a deplorable state of affairs to occur in regard to the underground workings of the Springs Mines, nor did he think that the policy of the directors in the past had been one to assure shareholders as to their ability. (Hear, hear.) He had to pass some serious remarks on one of the directors. Word had been passed on the 19th of March, at the Stock Exchange, that providing crushing proceeded as it had been going on, the profit for the month would reach about £37,000, but it was only equal to the crushing up to the 19th, so that for the balance of the period the company had apparently made no profit. A director, questioned on this subject, had said that he was dealing with tonnage, whereas investors and speculators usually dealt with values. The shares then stood at 57s. 3d. A published statement had said that the profit for March would show a marked improvement over February, and that statement was said to have come from another director. He (the speaker) left shareholders to judge as to the ulterior motives, if there were any. His experience, speaking generally, in going to the authorities for information had not been conducive to perseverance in that course. His remedy was that two independent gentlemen be nominated by the shareholders as directors, and that the "controllers of the Springs Mines do not apply the steam-roller." He thought this would mean speedy and reliable first-hand information, but as an alternative he suggested "that the administration of the Springs Mines should be handed over to a control which has made a lifelong study of the successful administration of companies."

Leakage of Information.

Mr. E. Hyman, who spoke at considerable length, said that information, official and unofficial, was that the mine was badly laid out, which had accounted for the reduced tonnage during the last few months and the lowering of the grade of ore. He thought this was partly occasioned by the work done to assist West Springs to get into a working condition, thereby retarding development on Springs. After the glowing reports, it showed a great want of forethought and business ability by the Board to have to confess how badly the property had been managed—the circular recently issued acknowledged the bad lay-out of the

mine, and also that there were not enough working faces of good value rock to maintain the monthly profits anticipated. He did not wish to decry the property, but thought it fair that the directors should be frank with the shareholders. He was, however, more concerned with other things. The shares had dropped since March from 62s. to 44s. in April, and some very curious things had happened in the head office of the company, and if the directors had not themselves been parties to this, certain servants of the company had been acting in a way which should lead the directors to dispense with the services of those people. In March and April the monthly returns of the mine had been published later than usual, and certain four or five brokers, who were well-known as getting advanced information from really good sources connected with the House, were constantly selling Springs, so that they dropped 5s. in seven days. Inquirers at the office as to the reason of the fall were told that the returns would be normal, there being nothing to justify the fall, but the February return showed only a profit of £25,200, as against the January return of £30,200. That, of course, accounted for the fall, and was against the statements of the company's officials. The March returns were not published till the 8th of April—two days later than usual. On April 1 the shares stood at 54s. 6d., and those who had sold early in March sold thousands again, knocking them down to 50s. 6d. People who sold got information from the office, and it looked unsatisfactory. Further inquiries made on the 3rd April elicited the reply. "As far as we know, there is nothing wrong, and the profits will be normal," but the March figure was down £1,500, which was serious, especially as the secretary had sent out a "ridiculous letter" giving the cause for the fall.

All these things, the speaker declared, showed that the controllers were losing the confidence of the general public. What reliance, he asked, could be placed on their words or their printed reports.

Mr. Hyman went on to say that a well-known man in Johannesburg had been given by one of the directors "the tip to buy these shares," and had lost money, and the only conclusion he could come to was that those bearing the shares on the Exchange decided that the public were getting suspicious, and some people had to be told to buy shares, as sufficient could not be sold short. He (the speaker) maintained that people connected with the company deliberately laid themselves out to mislead shareholders so as to give their friends a chance to make money by bearing the shares at the public expense. When the shares fell a notice should have been published that the month was going to be bad. Subordinates should not have been allowed to give untrue information to shareholders.

What were they to say of such treatment? Was the property being treated as if it belonged to the shareholders? He did not think so—they were being treated as if they were people to be exploited. He was confident the property was all right, but public confidence would not be restored until the directors' tactics were changed. He trusted Mr. Oppenheimer, who was taking over the management, would look into all these things. The future of the Far Eastern Rand depended on how Springs turned out, and English money was wanted. If such things

as had happened continued there would be a lot of thinking in London before touching South African shares.

Mr. Atkins asked how much was borrowed to pay the dividend? How much were the directors' short of the amount required?

The Chairman said he could not give the exact figure, but he believed it was £140,000.

Mr. Atkins: Don't you think that the declaration of a dividend under the circumstances was misleading?

The Chairman: No; I don't think so. The unappropriated profit after that was £209,000.

Mr. Phillips asked the chairman why, on the 25th of February, he informed him that the profits for the month would be in the neighbourhood of £35,000.

The Chairman denied making such a statement, and said it was absolutely impossible for any director or for the consulting engineer or anybody else to say, on the 25th of the month, what the profit was going to be. They could only make a calculation of the tonnage on the basis of the month's results up to such a date. It was the impression that the tonnage throughout the year would average 40,000 tons at least. That was the information he gave to Mr. Phillips. Unfortunately circumstances had occurred that had prevented that, for which he was not responsible.

Other Suggestions.

Mr. Millar submitted a report which he had drawn up after a three hours' examination underground. He did not think the mine had been worked for the benefit of the shareholders but for the benefit of a few whose thoughts were dominated by their own interests. The directors had pursued a policy of drift, and now he thought it would be some considerable time before the mine could again make substantial profits with consistency—they could not now expect more than £20,000 to £25,000 monthly.

The speaker went on to criticise the method of working, speaking against speeding up and large machines, and advising the use of light hammer drills. He thought shareholders should insist on somebody going down the mine every few months and publishing a report.

Mr. O'Flaherty said he thought it was perfectly clear from what had been said by the critics that the underground practice on the mine had not been devoted to the best interests of the company. If that was due to the late Consulting Engineer, then they had better get a Consulting Engineer entirely independent of groups who were interested in other properties. He welcomed Mr. Bielski's suggestion, for the election of one or two independent directors. Mr. O'Flaherty also criticised Mr. Newhouse's position as a director.

Mr. Bleloch supported the suggestion of Mr. Bielski, and the remarks of Mr. O'Flaherty as to Mr. Newhouse.

Some other shareholders present objected to the introduction of personalities and Mr. Riley Castle remarked that if they had had more able men like Mr. Newhouse they would probably have been in a better position.

The Chairman: I can't stop you, Mr. Bleloch, but I would be obliged if you would not indulge in personalities.

Mr. Bleloch resumed his personal criticism and the advocacy of the appointment of independent directors.

Mr. Crogan deprecated the criticisms which had been made and said that if shareholders went on in the way they had been talking the share would go down to 20s. As one who had been working for fourteen years on East Rand

mines he took particular exception to the criticisms of Mr. Miller.

Mr. Jones asked whether Mr. Miller was a mining engineer or a miner.

Mr. Miller: I have been connected with mining practically all my life.

The Chairman: For several years past you have been an engine-driver.

Mr. Miller: Yes. Previous to that I was working underground.

The Chairman's Reply.

The Chairman, replying to the various criticisms, said that Mr. Bleloch's remarks about Mr. Newhouse would have been more appropriate at the meeting of the Modder Deep or Geduld, where Mr. Newhouse was chairman.

Mr. Bleloch: I am not a shareholder.

The Chairman, dealing with the question of control, said it was only a few years ago that shareholders were congratulating the directors on the way they had carried on the finances and the development of the mine. They would take the criticism which had been made and do their best, if there were any points wrong, to put them right. The greatest difficulty they had had in Springs Mines had been in primary and secondary development. Primary and secondary development was for the purpose of showing in the quickest possible time what was in the mine, and what were the tonnage possibilities. The information obtained from that development had been extremely valuable. It might be possible that they were not in a position to carry on primary and secondary development at the same time so as to keep a sufficient surplus to meet their tonnage. That was, in fact, what had happened. But he was certain that the arrangements Mr. Davis was making would prove to be satisfactory in a very short time. It looked to him (the chairman) as if the middle of the year would be their low-water mark as far as tonnage was concerned, and that from that time they would be able to look for increased tonnage gradually. Replying to a criticism by Mr. Hyman, the chairman said that if an option had been in existence it would not have matured by this time any more than the shares which had been purchased would have matured.

The shares had been purchased and were being taken up in accordance with the agreement with the Government, and when required to meet capital expenditure. In dealing with the fall in grade and the fall in profits, the chairman again emphasised the effect of the influenza epidemic on the efficiency of the native labour. In regard to the leakage of information, he said that they had tried to find out where the information was coming from but it had been impossible. One person of whom they had grave suspicions had been removed. As to the selling of shares, he could assure Mr. Hyman that the Mines Selection, the Anglo-American or the Rand Selection Companies had not sold a single share for twelve months. As a matter of fact they had been very heavy buyers of shares. He personally had not sold a share in Springs Mines since March last year and then he sold eight odd shares. So far as the officials were concerned they had to sell their shares through him. Probably one or two hundred shares had been so sold. He had not been interested in the sale directly or indirectly of any shares since March last year. As to the reports, said the chairman, they were always published as soon as they came in.

The report and accounts were adopted.

The Chairman ruled out of order a proposition by Mr. O'Flaherty, seconded by Mr. Bleloch, that Mr. Newhouse be not re-elected.

The meeting confirmed the appointment of Mr. W. E. Hudson as a director in place of Mr. H. S. Johnson and elected the retiring directors, Messrs. W. E. Hudson and H. Newhouse.

Messrs. A. E. Page and F. W. Diamond were reappointed auditors.

WEST SPRINGS.

Mr. E. Oppenheimer presided at the 2nd annual general meeting of the shareholders of the West Springs, Ltd., which was held in the Board Room at Corner House, on May 23, and at which there were represented, directly or by proxy, 1,219,852 shares.

The chairman, in moving the adoption of the report and accounts, said that the work accomplished up-to-date consisted principally of construction work preparatory to shaft sinking and a certain amount of development for Springs Mines workings. Dealing first with the No. 1 Shaft, he explained that in February the work had received a set-back by heavy rains, which caused the soil around the shaft to become sodden, and the eastern side of the excavation to fall away and slide into the shaft. Fortunately, this was unaccompanied by personal accident to any of the employees. The consulting engineer came to the conclusion that the site of the shaft ought to be moved a short distance to the north-east, and this was done, and bore holes were put down. It was hoped that favourable sinking conditions would obtain on the new site. The additional boring had shown that the dolomite formation was absent, and this led to the belief that satisfactory sinking results would now be experienced at a smaller cost than would have been the case at the original site.

Having stated that No. 2 Shaft had now reached a depth of 175 feet, the chairman went on to deal with the agreement with Springs Mines. This month the sampling had shown a distinct improvement, and in the Far East Rand the payable reef occurred in well-defined elongated shoots. There was now reason to hope that they had now entered a shoot of rich ore, similar to those found in Springs Mines.

The total receipts were £507,540, the amount expended being £107,200. The amount expended on shaft sinking, permanent haulage ways and equipment was £64,631, and the amount available at the beginning of the current year, £400,346, and 18s. per share uncalled on 1,000,000 partly paid shares. The loan to Springs Mines, totalling at the end of the year £1,630, the whole of which would be refunded at the latest by the end of September, 1923.

The report and accounts were adopted unanimously, and the retiring auditors—Messrs. Alex. Aiken and Messrs. Deloitte, Plender, Griffiths, Annan and Co., were reappointed.

DAGGAFONTEIN MINES, LTD.

Mr. F. R. Lynch presided on May 23 in the board room at Corner House, at the fourth ordinary general meeting of shareholders in Daggafontein Mines, Ltd., at which 424,061 shares were represented personally or by proxy.

The Chairman, in moving the adoption of the report and accounts, said that the flooding of No. 1 shaft mine workings had prevented the working faces being accessible till February. Pumping equipment was installed, and towards the end of May the main station had been nearly recovered when work was suspended owing to an accident in the shaft. A mishap to the Robey Hoist put off baling till June, but in August the difficulties of dewatering the mine had been overcome. September saw a second and more serious accident happen to the Robey Hoist, and a duplicate engine was pro-

cured. Other accidents occurred, so that the struggle against water was carried on under most disheartening circumstances, some of the difficulties being due to second-hand plant. It was hoped that at the next annual general meeting a much more satisfactory statement of affairs would be submitted.

Up to the end of 1918 cash received amounted to £379,902, of which £681,960 was a loan guaranteed by the Consolidated Mines Selection Company, Ltd. The expenditure to that date was £354,445, leaving a balance of £25,457. Working expenditure for the year had amounted to £134,605. Owing to the issue of shares and the exercise of options capital stood at £699,765, and an agreement had been come to under which the C.M.S. Company, Ltd., guaranteed a loan of £100,000. The whole of the rights on the 250,000 shares expiring on the 27th March last had been exercised, and the company's indebtedness liquidated.

An agreement (tentative) had been reached for the purpose of 173 claims on the farm Daggafontein in exchange for a similar number of claims on New Geduld Deep Mynpachten, the price being 400 shares per claim, payment to be made after the increase of the company's capital had been authorised and registered. Application had also been made to the Government for the lease of the undermining rights of 450 claims on the farm Daggafontein, making a workable mining proposition of 2,059 claims. These had been granted, as well as an application for the proclamation of the farm and the allocation of mynpacht. There was every reason to believe that pay shoots near the eastern boundary of Springs would continue into their property, and the new rich shoot in Springs was of potential value to Daggafontein, the joint boundary possibly permitting mutual beneficial development work. At No. 1 shaft the key to the position was a pumping plant with a capacity above present requirements.

Under a scheme submitted by the Consulting Engineer, provision was being made for better social conditions for the company's employees, but for the whole scheme £150,000 was required. Operating expenditure was estimated at £200,000 for the year, and such funds had to be provided.

The report and accounts were adopted, after Mr. Wm. Pott had spoken, stating that the trend of payable ores in that area were markedly in their direction.

The retiring directors—Messrs. F. R. Lynch and H. C. Boyd—were re-elected, as were the retiring auditors, Messrs. Alex. Aiken and W. E. Goldby.

Increase of Capital.

At the conclusion of the above meeting an extraordinary general meeting was held at which a resolution was adopted giving the directors power to increase the capital of the company by an amount not exceeding £300,000 by the creation of new shares.

RAND SELECTION CORPORATION.

Speaking to the shareholders at the annual general meeting of the shareholders of the Rand Selection Corporation, Ltd., Mr. F. R. Lynch said that the company was now in its 30th year. In all 34 dividends had

been paid, involving £1,467,654, and the dividend of 35 per cent. for 1918, involving a distribution of £192,500, was the highest in the history of the company. He congratulated Mr. Charles Marx and Mr. Sonn, who had been intimately associated with the company since its inception. The increase in mining activity on the Far East Rand had had a beneficial effect on the sale of stands in Brakpan and Springs, the net receipts from the two townships amounting, for the year, to £50,184, comparing with £51,931 for 1917. The amount due on stands sold under the instalment system was £85,448, and the estimated value of unsold stands was £96,000. Though future sales returns could not be expected to equal the average of the past two years, no immediate appreciable falling off in collections was expected. The steady demand for stands in the Springs district, and the possibility that at some future date Springs would be directly connected by railway with Delagoa Bay and Durban led the directors to apply for an extension of the township on land contiguous to the existing township, but on the western side of the railway line. They thought industrial stands on that site would be in good demand should the railway connections be made, while the establishment of warehouses and stores in Springs would effect a reduction in the distance by rail from the coast, which would tend to lighten the heavy burden of charges that the mines on the Far East Rand now had to bear on account of overseas goods travelling via Johannesburg and Germiston. Certain stands would be earmarked for business purposes and these would be some distance from the native location.

Discussing the 35 per cent. dividend for the year, the chairman said that in order that shareholders might not entertain false hopes as to future dividends, he called special attention to the fact that the exceptionally high dividend of 22½ per cent. made for the second half of 1918 was only possible in consequence of the unusual occurrence of the two dividends paid by the Springs Mines, Ltd., being declared during the second half of the year.

In closing, the chairman paid a tribute to Mr. C. E. Knecht.

The report and accounts were adopted.

An extraordinary general meeting of shareholders was held at which the directors' proposals were agreed to.

BRAKPAN MINES, LTD.

The sixteenth ordinary general meeting of the shareholders of the Brakpan Mines, Ltd., was held at the board room of the Corner House on May 25. Mr. F. R. Lynch presiding. There were represented, directly or by proxy, 472,617 shares.

In moving the adoption of the report and accounts the chairman said that the result of the year's operations was a working profit of £355,797. For dividends £257,107 was provided leaving an unappropriated profit of £51,232 to be carried forward—£15,857 in excess of the unappropriated balance at the beginning of the year.

The epidemic of Spanish influenza had caused a serious shortage of native labour, reducing the tonnage milled. On the

subject of working costs great economy in the consumption of stores had been practised, but this was outweighed by the increase in price. The price would come down, but it was impossible to say when, and before the benefit was felt considerable stocks had to be worked off. On the other hand the increase of employees' wages had come to stay. Hopes of reduced costs lay in the direction of further economies in the consumption of stores, and a reduction in the cost of them, and particular attention was being given to the buying and general control of mine stores, and the establishment of a method of cost accounting. It was hoped that the policy of gradually reducing the heavy stocks would be carried out.

Since the end of the year 15,500 shares had been issued, for which £77,500 was to meet capital expenditure for the six months ending 30th June of this year.

He wished, said the chairman, particularly to mention one matter regarding the monthly declaration of profit. During the last few months the yield per ton milled had been in excess of that called for, and certain stopes, on re-sampling had given a higher yield than the value placed on them in the ore reserve. In practice fluctuations constantly took place, but generally the variation occurred both ways. They had experienced times when a large number of stopes had shown a falling off in value, but the swing of the pendulum was the other way, and now the yield was higher than called for by about 2dwts. per ton milled. This proving to be continuous the directors had decided to create a published gold reserve, which would be added to or drawn on as necessity arose.

The report and accounts were unanimously adopted.

The retiring directors, Messrs. W. S. Saunders and H. Newhouse were re-elected, and the appointment of Mr. W. E. Hudson as a director in place of Mr. H. S. Johnson Hall was confirmed.

Messrs. A. E. Page and L. A. Whiteley were reappointed as auditors.

ANGLO-AMERICAN CORPORATION.

Mr. E. Oppenheimer, chairman of the board of directors, presided at the annual general meeting of shareholders in the Anglo-American Corporation of South Africa, Ltd., on May 26, at which there was a representation of 447,467 shares. In moving the adoption of the report and statement of accounts the Chairman said: Gentlemen,—At the date of last year's annual general meeting of shareholders I was engaged in London on the business of the Corporation, and was consequently unable to preside at that meeting. It will, therefore, not be out of place if I take this opportunity of referring to the aims and objects which inspired the formation of the Corporation. Mr. W. L. Honnold, one of your permanent directors, was consulting engineer to Brakpan Mines and Springs Mines from the inception of these companies until 8th November, 1912, when he became chairman of the boards of directors, a position which he relinquished at 16th July, 1915, in order to return to America. He is therefore peculiarly fitted to give an authoritative opinion on the mining and general conditions obtaining on the Far East Rand. Mr. Honnold and I were very impressed with the potential value of the ground held by

the Brakpan and Springs Companies, not only in respect of the claims actually held, but more especially on account of the favourable geographical position of that ground in regard to acquiring adjoining gold bearing areas whenever the Government, as owners, should decide to call for tenders for the lease of the mining rights of these areas. I therefore entered into a reciprocal agreement with the Consolidated Mines Selection Company, Ltd., prior to the formation of your Corporation, under which I had the right to participate to the extent of 50 per cent., during a period of seven years from the 8th June, 1917, in any gold mining interests acquired by the C.M.S. Company in any part of the Transvaal east of the present property of the East Rand Proprietary Mines, and north of the township of Heidelberg. This agreement, which I subsequently ceded to the Corporation free of charge, is drawn on very broad lines so as to include issues of shares, options on shares and any class of mining business obtained by the C.M.S. Company in the district indicated, whilst it specifically mentions lease areas situated on the farms De Rietfontein No. 14, Springs No. 15, Geduld No. 24, and Daggafontein No. 25. The agreement secured to the Corporation at its inception a goodwill of very considerable prospective value, and I am pleased to be able to state that the co-operation between the Mines Selection Company and this Corporation has realised our hopes and has resulted in the acquisition of large lease areas on the Far East Rand. The successful termination a few days ago of negotiations undertaken with the object of increasing the claim areas of Daggafontein Mines has resulted in the western boundary of that company's property being extended to the eastern boundary of Springs Mines, Ltd., and the Mines Selection Company and this Corporation now control mining companies owning contiguous properties situated on the Far East Rand, and comprising an area which is equivalent to 11,251 claims or 16,536 acres, and covering a distance of approximately 12 miles in length and four miles in breadth at its widest part. Reference to the map which will accompany the report of this meeting will more clearly demonstrate the position and potential value of our interests.

Pioneers of the Far East.

As many of you are no doubt aware, the directors of the C.M.S. Company may justly claim to be the pioneers of the Far East Rand district, and the information so far obtained at Brakpan and Springs justifies the belief that the Far East Rand areas we are now interested in are mining ventures of very great promise, and that in the long run they will reward the labour and initiative of the C.M.S. Company and this Corporation. By the acquisition of considerable interests in the gold mining areas I have mentioned, one of the main objects of the Corporation was attained. The very important task now devolves on the controlling house, namely, the Consolidated Mines Selection Company, to so perfect their engineering and general organisations that the best possible policy may be determined and carried out for the speedy and economical exploitation of the large and promising areas for the opening up of which they are trustees. I know that the directors of the C.M.S. Company fully realise their responsibilities in this connection, and it remains for this Corporation to second their efforts in every possible way.

The appointment as consulting engineer of Mr. Carl R. Davis, who is known to some members of our New York Committee, and has been for many years in intimate mining association with Mr. Honnold, gives me great pleasure, and is, I am sure, an appointment which will commend itself to shareholders of this Corporation. Mr. Davis brings to his new position a very valuable practical knowledge of the mining problems of the Far East Rand; he was for seven years general manager at Brakpan Mines, and the experience gained by him during that time will be of the utmost assistance in the opening up and development of the areas now controlled by the C.M.S. Company. Following the very sound lead given by the Mines Selection Company, your Corporation acquired a considerable holding in the shares of the Rand Selection Corporation, Limited. As many of you are aware, the Rand Selection Corporation is the freehold owner of the farms on which the mining properties of Brakpan Mines, Springs Mines and West Springs are situated. When Brakpan Mines and Springs Mines were formed the Rand Selection Corporation acquired large blocks of shares in those companies in consideration of its mining rights as freehold owner of the ground. These blocks of shares have been retained as a matter of policy and they enable the Corporation to exercise a controlling influence in the companies named. Furthermore, the Rand Selection Corporation acquired a considerable holding in Daggafontein Mines, Limited, as consideration for their coal rights, which holding was increased firstly, by a participation in the arrangements made to finance the Daggafontein Company, and, secondly, by a participation in the sale of an additional 173 claims to the Daggafontein Company, so that the Rand Selection Corporation is probably by now the largest individual shareholder in the Daggafontein Company, as well as in Brakpan Mines and Springs Mines.

West Springs.

The Rand Selection Corporation is also interested in West Springs, Limited, but in this company the Anglo-American Corporation holds the controlling interest. The policy of the Board of Directors of the Rand Selection Corporation with regard to the Brakpan and Springs holdings will, undoubtedly, be followed in connection with the Daggafontein and West Springs interests.

At the risk of appearing to digress, I would like to take this opportunity to call the attention of shareholders to a point which I regard as important, and which may very probably be overlooked. Brakpan Mines and Springs Mines were originally laid out to meet the mining requirements of the areas comprised in their Mynpachts and Di-coverers' Claims. In 1916, however, Brakpan Mines secured the lease of an area which increased its claim holding from 1,150 to 3,387. In the following year Springs Mines secured the lease of the mining rights of an additional area of ground, increasing its claim holding from 1,332 to 3,568. By the acquisition of these areas, Brakpan Mines and Springs Mines, although fully developed as regards their original claim holding, were in some important respects brought back to the position of developing mines. We must therefore not regard either of these properties from the point of view of the present and the immediate future; we must look at them rather as de-

veloping companies which will come to their fullest earning power a few years hence, and in respect of which a low rate of interest on capital invested at the present moment is acceptable in view of the promise of a higher rate of interest to be paid over a very long period of time after the additional areas have been explored and developed. West Springs and Daggafontein Mines are of course purely developing mines.

In addition to our large shareholding in the Rand Selection Corporation - which constitutes us, with the exception of the C.M.S. Company, the largest individual shareholder in that corporation - we have acquired an option to call 75,500 shares at 65s.; this option at the present time has more than two years to run, and I attach very great value to it because all the Far East Rand gold mines in which the Rand Selection Corporation and this corporation are interested are, as already explained, developing mines. It is true that Brakpan and Springs have been producers for some time, but in both cases the major portion of their claim holdings is comprised in ground held under lease from the Government, and development of which has been delayed owing to the abnormal conditions produced by the war. During the two years which our option on Rand Selection shares has still to run a great deal of development work will be done from existing shafts on the lease areas I have referred to, and it is estimated that no less than four new shafts (two on Brakpan, one on Daggafontein and one on Springs) will have reached the reef before the expiration of the option, and will afford additional and very valuable information as to the whole district. It will not be possible to develop the West Springs ground from the shafts of that company during the next two years, but on the other hand development is proceeding, in terms of an agreement between the two companies, as rapidly as possible from the workings of Springs Mines, Ltd. Prior to the expiration of our option much valuable information will also have been obtained in regard to the property of the West Springs Company. When we exercise our option we thereby become by far the largest individual shareholder in the Rand Selection Corporation.

Your directors have not confined their attention solely to the Far East Rand areas. Propositions in South Africa and in America have had attention, but none of the proposals made to the board has so far resulted in business. I may mention, however, that we are at the present moment investigating certain copper propositions which seem to warrant some little preliminary expenditure, but I would not like shareholders to conclude that business will necessarily result; copper propositions are apt to be more illusive than other mining business, and to secure a payable copper property at the first attempt would be almost unheard of good fortune.

Industrial Undertakings.

As shareholders are aware, the objects of this corporation cover a very wide scope and have particular reference to industrial undertakings. Although so far the business acquired by the directors has only comprised mining ventures, the industrial possibilities have not been neglected. I am a great believer in the future of South Africa, not alone in mining but also from the agricultural and industrial aspects. The National Bank of South Africa Ltd., is in course of registering the National Industrial Corporation of Africa, Ltd., with a

paid up capital of £500,000, to assist in establishing and financing new industries. We have participated in the formation of this corporation, and will be represented on the board of directors.

Financial Statements.

I now pass on to the consideration of the financial statements. The accounts call for but little comment from me. Full details in regard to capital funds are given in the directors' report, and it only remains for me to add that owing to the large amount subscribed by various shareholders in advance of calls, there was no necessity to make formal calls in respect of capital. The note appearing on the balance sheet regarding contingent liability refers to our undertakings in connection with the provision of working capital and loans to companies in which we hold interests. The large increase in the book value of shares and interests in mining ventures is due to our having secured further interests on the Far East Rand. These interests have all been taken into account at cost price. The sundry debtors item includes dividends declared but not paid as at 31st December last, and certain other items, all of which have since been received. The net balance credited to Profit and Loss Account is £43,076, after making provision for the small debit balance of £11 odd, brought forward from the previous year. The profit earned is equal to rather more than 8 per cent. on the capital paid up, which I think is to be regarded as a satisfactory result for the first full year's operations, especially when it is borne in mind that a considerable portion of our capital is invested in mining companies which are in the development stage only. As foreshadowed at the general meeting of shareholders, the working of the ground secured by the Corporation under mineral lease from the Government has now been undertaken by a new company named West Springs, Ltd.

The annual meetings of all the Companies in which we are interested were held on Friday last, and as it is our intention to attach the report and accounts of those Companies, together with a copy of the remarks from the Chair, to the report of this meeting, it will serve no purpose for me to give you verbally information which you will shortly obtain in printed form.

I am pleased to be able to inform you that Mr. William B. Mein, who was for many years Consulting Engineer to the Central Mining and Investment Corporation in Johannesburg, has joined our New York Committee, and his great experience and ability will no doubt be of the utmost assistance in connection with South African matters. I cannot conclude my remarks without placing on record some acknowledgment of our indebtedness to Mr. W. L. Honnold. As you are no doubt aware, Mr. Honnold has been very busily engaged in Europe and in the United States of America on work of international importance, assisting Mr. Hoover in that gentleman's endeavour to solve the question of feeding the peoples of Europe generally and the Belgian people in particular. Mr. Honnold has not had the opportunity of visiting South Africa since the inception of the Corporation, but I am pleased to be able to say there is every likelihood that we shall see him in Johannesburg as soon as his present labours have been completed, possibly about the end of the current year. I have been in constant communication with Mr. Honnold by cable and letter; he is well acquainted with the affairs of the Corporation, and his great knowledge of South African mining, and particularly on the Far East Rand, has been of invaluable assistance to my colleagues and myself in conducting the affairs of the Corporation. I have now

much pleasure in formally moving the adoption of the report and accounts in your hands.

Mr. Langerman seconded the motion, which was carried unanimously.

Mr. E. S. Langerman seconded the motion for the adoption of the directors' reports and statements of account for the year ended 31st December, 1918, as submitted.

The motion was then put to the meeting and carried unanimously.

Remuneration and Election of Auditors: On the motion of Mr. W. S. Saunders seconded by Mr. A. F. Lyall, Messrs. Alexander Aiken and W. E. Goldby were re-elected auditors of the corporation until the date of the next annual general meeting of shareholders, and their remuneration for the past audit was fixed at fifty guineas each.

The proceedings then terminated.

NEW GEDULD DEEP.

The annual general meeting of the shareholders in the New Geduld Deep, Limited, was held on May 21 in the Board Room of the Johannesburg Stock Exchange, Mr. E. Mansfield presiding.

The Chairman said that the report and accounts covered the best year the company had experienced. The net profit of £15,508 19s. 5d. slightly exceeded 50 per cent. on the capital, and was £6,000 higher than the figure reached in 1917. The greater portion of it was, as usual, derived from township sales, but the large increase was due to dividends on Springs Mines shares and to profits on investments incidental to the holding in that company. The last-named item amounted to £1,779, and represented the profit realised on "Rights" taken up at 60s., and the proceeds of 1,860 "West Springs Options" received as a bonus, in respect of Springs holding. The West Springs shares, received by way of bonus, were "put" to the Anglo-American Company at par and the proceeds were included in the dividend item of £4,110. Expenditure for the year had been £2,687; taxes and donations amounting for £777, leaving £1,910 as the total debit for charges and costs of administration here and in London.

In the balance sheet the principal changes were a reduction of £6,295 in amounts owing on stands and of £3,941 in mortgage loans. These reductions were reflected in the increase of over £10,000 under the heading of "cash."

In view of the substantial profit earned, and of the strong financial position, showing over £48,000 in cash assets, the Board had felt justified in raising the dividend declaration to 50 per cent. (i.e., 1s. per share) for the year. This left £4,382 16s. 9d. lying to the credit of appropriation account and available for future distribution.

In connection with "Geduld Township," out of the original holding of 935 stands, only 12 were unsold at the end of the year. Eight of these had since been realised and, of the remaining four three had been donated as a site for a trades hall.

Under these circumstances shareholders might naturally assume that their career as a township company was practically ended and that it only remained to collect outstanding instalments and distribute the cash to shareholders. He (the Chairman) was hopeful, however, that over and above the winding up of the Old Township affairs, the company still had a prosperous future in the same line of business. When disposing of mining rights they retained ownership of the freehold of the two mynpachts. The freehold was retained because it was hoped to

turn it to account by securing township rights over these areas. It was obvious that more township accommodation was required around Springs, and no other ground was so well situated as theirs for meeting public requirements in this direction.

Progress in the matter had been delayed because it appeared that until the adjoining Government claims were leased the Mines Department could not say positively what surface area would be required for mining purposes. They might have to exercise patience until the Eastern Geduld ground was disposed of and its lay-out determined. It seemed unlikely that the Geduld Deep area would be required for shafts or surface equipment. If that view was correct, there should be no serious obstacle to getting the extension of township rights applied for.

The company's Springs Mines share holding was unchanged. The trend of the market price for these shares in recent months had been very disappointing, though there had been a partial recovery from the low levels touched a few weeks ago. The Report recently prepared by the Consulting Engineer, Mr. Carl Davis, dealt very fully with the position and prospects of the company, and, effectively disposed of many alarming rumours lately in circulation.

On the question of distributing or retaining the Springs Mines shares, the Chairman said that the Board acquired an additional 500 shares by purchase in order to facilitate distribution when that course should become advisable. They held an option to take a ground floor participation in any company floated under C.M.S. auspices to include the Mynpacht areas. While that option existed, it was necessary to retain the Springs shares to enable the financing of any interest taken in such a company. The Mynpachts, however had lately passed from the control of the C.M.S. into Government hands, and consequently their rights of participation had fallen through. The question arose now as to whether any further purpose was served by the company continuing to hold these shares, or whether they should be distributed to shareholders in the form of a bonus.

The Board was already in communication with several of the larger shareholders for the purpose of ascertaining their views, and would welcome any expression of opinion on the subject from shareholders. Meantime they were enquiring in London whether, in the event of distribution being decided upon, it would be permissible to issue on that side the Springs shares accruing to London shareholders.

He hoped that within a few weeks the Board would be in a position to take a definite decision as to what course to adopt.

The report and accounts were adopted. The retiring directors and auditors were re-elected.

A recommendation to the Board by Mr. Jacobs that the directors favourably consider the immediate distribution of Springs Mines shares was adopted.

NEW STATE AREAS.

The second ordinary general meeting of the shareholders in New State Areas, Ltd., was held on May 27 in the board room of the Consolidated Buildings, Mr. John Munro presiding. In moving the adoption of the report and accounts, he said: The first ordinary meeting of shareholders was held on the 27th November, 1918, when the balance sheet, made up to 30th September, was submitted and full details of the work accomplished to 31st October supplied. Between that date and the end of the year sinking was

suspended and all our energy concentrated on the erection of the permanent hoists and headgear. Shaft sinking was restarted on both shafts early this year, and on the 20th May the south shaft had reached a depth of 369 feet, and the north shaft a depth of 225 feet. Both shafts are now sinking in dolomite formation, and there is a fair quantity of water to be dealt with in each case. The rate of progress is somewhat slow at the moment—about 20 feet per week—but when the dolomites are passed we anticipate that more rapid progress will be made.

The manager's report gives the fullest details of the machinery, plant and buildings erected, from which it will be seen that all reasonable precautions have been taken to ensure that everything is in order to avoid delay in shaft sinking and provide suitable accommodation for our employees.

The balance sheet gives full details of the expenditure incurred since the formation of the company.

Since the close of the year Mr. James Richardson, who has for a long time been associated with our group of mines, was appointed manager. I would here like to convey the Board's appreciation of the excellent services rendered by Mr. M. J. Turner as acting manager, in addition to his onerous duties as manager of the Government Areas, since the resignation of Mr. Thacker.

The report and accounts were adopted.

The retiring directors, Messrs. C. Marx and P. Ross Frames, C.M.G., were re-elected, and the auditors, Messrs. E. Danckwerts and Co., and Messrs. Alex Aiken and Carter, were reappointed.

GLENCAIRN MAIN REEF.

Moving the adoption of the annual report and accounts submitted to the twenty-sixth ordinary general meeting of the shareholders in the Glencairn Main Reef Gold Mining Company, Mr. John Munro said:—At our last annual meeting I informed shareholders that the payable ore reserves were exhausted, and that our only hope for carrying on was based on the prospect of being able to make a profit from reclamation and the working out of shaft pillars. Mining operations were carried on until November, when it became apparent that it would be impossible to continue without incurring serious losses month by month, and the mine was consequently closed down. The value of the gold recovered from all sources was £137,182 1s. 4d., at a cost of £134,301 5s. 2d., leaving a profit of £2,880 16s. 2d. for the year. Of this amount a benevolent Government taxed us to the extent of £2,149 because the company paid a dividend of five per cent. as a return to shareholders from the result of three years' operations. There still remain some 161,000 tons of accumulated slime to be treated, and this should take about two years to complete. It was not until February of this year that the necessary alterations to the plant were completed, so as to treat the tonnage estimated in your consulting engineer's report. A small profit was made in April, and it is anticipated that slightly increased profits from now onward will be made as the plant gets thoroughly conditioned. Meantime the work of dismantling and selling the plant is being proceeded with. Practically the whole of the saleable mine stores, with the exception of those required for the slime treatment, have been disposed of, and certain of the buildings and portions of the plant have been sold. The remainder of the equipment will be disposed of as opportunity offers.

Before closing I would like to convey the directors' appreciation of the loyalty and hearty co-operation displayed by every grade of the employees, as a result of which the "Glencairn" was for years the cheapest worked mine on the Rand.

The report and accounts were adopted. The retiring directors, Messrs. J. Munro and C. Marx were re-elected, and the auditors, Messrs. A. E. Page and W. Fergusson were re-appointed.

THE GINSBERG.

The twenty-fourth ordinary general meeting of the shareholders in the Ginsberg Gold Mining Co., Ltd., was held in the board room of the Consolidated Buildings on May 27, Mr. J. Munro presiding.

The Chairman, in moving the adoption of the report and accounts, said: From the manager's report it will be seen that the ore crushed was 155,330 tons against 179,590 tons for the previous year. Compared with 1917, working costs were 2s. per ton higher; the yield reflected a small increase of 9d. per ton, and the working profit for 1918 was £5,038 5s. 2d. as compared with £15,854 10s. 10d. for 1917, but it should be mentioned that owing to the abnormal rains early in the year under review operations for many months resulted in a loss. In his report for March the manager stated that "the future prospects are not good owing to scarcity of working places," and a special report by the consulting engineer, dated 25th April last, concluded as follows: "With the reserves within reasonable distance of being exhausted, and there being no possibility of increasing the amount of ore from reclamation, it will be clear that the profitable life of the mine has about come to an end. There is just the barest chance that the face values might improve a little during May, but it is hardly likely, and after May the position will get rapidly worse, and any attempt to continue might easily result in serious financial loss. In view of all the circumstances, I can only recommend, not without considerable regret, that operations should be suspended during or at the end of May, and that the usual provisional month's notice be given to all monthly paid men on the 1st May next." From the foregoing it will be apparent to shareholders that the mine has now arrived at the stage when it is no longer possible to make a profit. The loss incurred last month was £733. The payable ore reserves have been reduced to 31,000 tons, and although these are still theoretically payable, practically it is impossible to extract the ore at a rate sufficient to make a profit on it, and although a certain amount of ore is still being obtained by reclamation work, the quantity is small and the value poor. The mine may thus be said to be worked out, and under the circumstances there was nothing to be done but to consider the suspension of operations. Instructions were issued to stop all unpayable stopes, clean off all stulls, and generally to close up mining operations as quickly and economically as possible. These steps will probably result in a small profit for the present month, but these accumulations cannot last long, and in a very short time work will be suspended. There still remain about 25,000 tons of accumulated slimes to be treated, of a value of about 2.56 dwts.; this will take some six or seven months to treat, and should show a small profit.

Acting on your consulting engineer's advice, your directors were reluctantly compelled to notify the monthly-paid employees that owing to

the exhaustion of payable ore, mining operations would cease at the end of the current month.

During the life of the mine dividends totalling 387½ per cent. have been paid by the company.

The report and accounts were adopted.

The retiring directors, Messrs. C. Marx and E. Brayshaw, were re-elected, and the retiring auditors, Messrs. E. Danckwerts and Co. and Mr. W. Fergusson, were reappointed.

There were present at the meeting Messrs. Charles Marx, G. Imroth, J. F. Rutherford, H. A. Rogers, W. L. White (consulting engineer), J. G. Lawn, E. Brayshaw, T. Hall (secretary), and E. H. Francis (transfer secretary).

NEW PRIMROSE.

Mr. John Munro presided at the annual ordinary general meeting of shareholders in the New Primrose Gold Mining Company, Ltd., which was held on May 27 at the Consolidated Buildings. In moving the adoption of the report and accounts the chairman said:—The manager's report contains as usual full details of the year's operations, but it might be as well if I mentioned the most important points. The ore crushed was 22,700 tons lower than 1917; the grade showed an increase of slightly over 2 per ton, but against this the costs were about 2s. 6d. higher. The decrease in the tonnage milled is attributed to two causes, one being the shortage of native labour, and the other the increased underground sorting, but this latter factor has tended to increase the value of the yield by 1s. 6d. per ton. Consequent on the decreased tonnage milled, the gross profit for the year was £6,000 less than 1917. Results have recently shown an improvement tendency, and it is gratifying to be able to record an improvement in grade for the past year as compared with 1917. The reclamation work in the May Deep and May Consolidated sections is turning out fairly well, and one can only express the hope that it may continue.

The report and accounts were adopted.

The retiring directors, Messrs. C. Marx and E. Brayshaw, were re-elected, and the auditors, Messrs. F. W. Diamond and English and Mr. A. E. Page, were re-appointed.

CONSOLIDATED LANGLAAGTE

The sixteenth ordinary general meeting of the shareholders in the Consolidated Langlaagte Mines, Ltd., was held in the board-room at the Consolidated Buildings on May 27, Mr. John Munro presiding.

In moving the adoption of the report and accounts, which was agreed to, the chairman said:—By the fourth annual drawing the debenture liability was reduced to £100,000 at the close of the year. A further drawing of £25,000 took place on the 23rd instant, and the debentures drawn for redemption will become payable on the 1st July next. You will have observed from the directors' report that an arrangement has been concluded with the Union Government whereby we acquired under the Bewaarplaats Act of 1917 mining rights over an area equal to 61.53 claims. For the right thus acquired the company has to pay the Government 3.217 per cent. of its profits as defined in the Mining Taxation Act of 1910 from the beginning of 1917. The share or profit accruing to the Government for the years 1917 and

1918 is estimated at £8,034 14s. 11d., and this liability is reflected in the balance sheet.

Owing to the shortage of native labour, the heavy floods at the beginning of the year, and the influenza epidemic in October last, shaft sinking was entirely suspended, development was retarded, and there has been a fall in the tonnage milled and in the profits earned for the year. The quantity of ore crushed shows a decrease of 82,350 tons as compared with the previous year. The yield was slightly higher, but the increase in the working costs was 1s. 10d. per ton milled, with the result that the gross profit showed a decrease from £231,255 14s. 10d. in 1917 to £161,713 19s. 10d. for the year under review. In consequence of this serious decrease in profits your directors were only able to declare a dividend of 5 per cent. for the year, as compared with 17½ per cent. paid in 1917. The native labour supply at present is better than it has been for a long time past, and if this position can be maintained the tonnage milled per month should show some improvement over last year's figures, an increase in the scale of development accomplished, and shaft sinking restarted. A pleasant feature of the year's work is the increase in the value of the ore reserves from 6 dwts. to 6.2 dwts. This is principally due to the opening up of a good area of main reef leader at the bottom of the West Shaft, in which, up to the end of last month, 141,000 tons of ore of excellent grade have been developed.

The stores carried on the mine which at the close of the financial year stood at £80,888, have since been reduced, and now stand at £62,585.

The retiring directors, Messrs. J. Munro and E. Danckwerts, were re-elected, and the auditors reappointed.

WITWATERSRAND G.M. CO.

Moving the adoption of the report and accounts at the annual ordinary general meeting of the shareholders of the Witwatersrand Gold Mining Company, Ltd., which was held in the board-room at Consolidated Buildings on May 28, Mr. John Munro, chairman of the directors, said:—The ore crushed for the year under review was 428,550 tons, a decrease of 22,465 tons as compared with 1917, the cost increased practically 2s. per ton, while the grade fell by 1s. 9d. per ton, the decrease in the gross profit for the year being £88,754 11s. 10d. Notwithstanding this, your directors were able to declare two dividends, of 10 per cent. and 5 per cent., at the end of June and December, respectively. From the manager's report it will be seen that, although there was an increased native labour complement, the general shortage was such that the force available during the year was only 69.63 per cent. of our complement. The profitable working of this mine is more dependent than most mines on an adequate supply of native labour, inasmuch as there is little opportunity for substituting machine stoping in place of hand stoping beyond a certain point. As your labour complement is still on the small side the scale of work is in consequence from time to time considerably reduced, with a resulting fall in profits which is more than proportionate to the fall in the tonnage treated. Practically the whole of the development accomplished was on the southern series.

The ore reserves at the end of the financial year showed an increase of 72,000 tons over the reserves at the beginning of the year, the value being slightly less over an increased stoping width. Development has shown an improving tendency since the close of the financial year. For the first three months the percentage payability was 70.1 per cent., and over a footage of 1,170 feet the reef exposed gave 9.8 dwts. over a width of 44 inches. Shaft sinking has been restarted, and we hope to open up two more levels during the course of this year. If the results at present being obtained in the bottom levels continue down, the prospects of the mine in depth will be better than for some time past. These results for the first four months of this year are as follows:—

Level	Feet Driven.	Reef Width. ins.	Reef Value. dwts.
25 E.	160	58	8.6
25 W.	100	28	9.8
26 E. and W.	360	44	10.1
27 E.	30	13	10.9
27 W.	20	10	26.8

The above values show a distinct improvement on the ore exposed between the 20th and 24th levels, and as other mines in the district are also getting improved values at depth, we have every reason to look forward to a continuation of the improvement.

Mr. L. Edwards said: I have the pleasure in seconding the resolution for the adoption of the report and accounts. In doing so I should like to congratulate the directors and staff of the company upon having made the best of a situation which has been and still is teeming with difficulties and drawbacks. I refer not so particularly to our own difficulties, but to those which beset the industry generally, and which have within the last few days been so forcibly placed before the Government by the Chamber of Mines. The war has ended, and we and our Allies are the victors. To that victorious result I say that the Witwatersrand mining industry has contributed in a very high degree. Shareholders, directors, and mine-workers of all ranks put self on one side, and worked with minds and pockets concentrated on one point—to turn out the gold which was a prime necessity for victory. It is a matter of very great regret that the sacrifices of our great industry should be so little recognised, and such deaf ears turned to our appeals for even such a measure of assistance as will enable us to keep our mines going. Just imagine the mental attitude of a Prime Minister who, knowing what the closing down of twenty-two Rand mines means to those employed by and dependent thereon, to the State revenue, to the trade of the country and its markets, feebly hopes that they will not close down at once. I trust, sir, that Parliament will intervene, and that this evil supineness and indifference on the part of the Government will not be suffered to continue.

The report and accounts were adopted.

The retiring directors, Messrs. S. B. Joel and H. Nourse, were re-elected.

LANGLAAGTE ESTATE.

Mr. John Munro presided on May 28 at the 28th ordinary general meeting of the shareholders in the Langlaagte Estate and Gold Mining Company, Ltd., and in moving the adoption of the report and accounts, said: The

reports of the consulting engineer and mine manager, which were circulated to shareholders along with the report, deal fully with the year's operations. On reference to the accounts it will be seen that the revenue from gold amounted to £647,999, and the working expenditure to £508,916, leaving a profit of £139,083, or 5.211s. per ton milled. As compared with the previous year, this profit shows an increase of £26,121, or an improvement of over 1s. per ton milled. In consequence of the additional profits made the directors were enabled to distribute increased dividends, amounting to 12½ per cent. for the year, as against a 10 per cent. distribution in 1917.

This company, like many others, suffered from the heavy floods experienced in the early part of the year, and, apart from being compelled to stop shaft sinking and development for a few months, the profits for the first four months of the year only averaged £7,749 per month as compared with a monthly profit of £13,511 for the succeeding eight months.

Your property has been increased by the purchase from the New Era Consolidated, Ltd., of a block of 22 claims adjoining the southern boundary of the mine. The cost to the company was only £600 per claim, and as it is expected by the acquisition to increase the life of the mine by an additional two years, the directors consider that the shareholders have every reason to be gratified by the purchase. Development on this mine is keeping up well as regards width, value and percentage payability. Owing to the floods of last year the work of opening up new levels was considerably delayed, with the result that it has now been decided to resume the sinking of the western incline. The labour position has not been good for some time, which accounts for the drop in tonnage milled during recent months. At the moment the position is rather better, due to an influx of East Coast labour, but we are still about 300 boys short of the average figure for last year.

The value of stores in hand at the end of the year was £78,980, and at the end of April £72,011. The reduction is small, and would have been much larger but for indent orders coming forward.

The report and accounts were adopted.

The retiring director, Mr. N. J. Scholtz, was re-elected, and the auditors reappointed.

NEW UNIFIED.

At the 21st ordinary general meeting of the shareholders in the New Unified Main Reef Gold Mining Co., Ltd., held on May 21 in the board room at Consolidated Buildings, Mr. John Munro moved the adoption of the report and accounts. He said: The reports of your consulting engineer and mine manager contain full details of the operations for the year. The tonnage crushed was less by 14,010 tons as compared with 1917. Working costs were 1s. 4d. higher and the grade 6d. less, consequently the profit showed a reduction of over £18,000. The rise in costs was due to the increased prices of stores, etc., and the fall in grade to the small percentage of main reef leader mined. During the year there was a considerable depletion of the ore reserves. The re-estimation at 31st December showed

180,840 stoping tons of practically the same assay value and stoping width. Two dividends of 5 per cent. each were declared during the year, and the balance carried forward was £807 less than in 1917.

A feature of this mine is the excellent costs maintained throughout the period of the war. The property has now reached the stage, however, when it is becoming increasingly difficult to supply the reduction plant with the full tonnage of payable ore. An increased percentage of the tonnage to be treated in future will have to be mined from the south reef and main reef leader, and in consequence costs may to some extent be increased, but against this a slight improvement in the grade of the ore may be anticipated.

The report and accounts were adopted.

The retiring directors, Messrs. J. Munro and G. Imroth, were re-elected, and the auditors, Messrs. Ferryman and Goldby and Mr. F. W. Bompas, were reappointed.

RANDFONTEIN CENTRAL.

The twelfth ordinary general meeting of the shareholders in the Randfontein Central Gold Mining Company, Ltd., held May 28, was presided over by Mr. John Munro, who moved the adoption of the report and accounts. In doing so he said: In submitting the report and accounts for the year ended 31st December, 1918, for your adoption, I regret having to inform you that the period under review has been a most unfortunate and a very difficult one for your directors to deal with. The reports of the consulting engineer and the mine manager which were circulated to shareholders with the report and accounts deal fully with the operations for the year. It will be observed on reference to the manager's report and the working expenditure and revenue account that the tonnage crushed for the year only amounted to 1,745,900 tons, which yielded a profit of £108,072 compared with a tonnage of 2,017,181 treated in 1917, which yielded a profit of £459,697 8s. This shortfall in profit is attributable to various causes which I shall now briefly enumerate. Early in the year we experienced exceptionally heavy rainstorms which flooded all sections of the property with disastrous effect on mining and milling operations and caused a serious loss of profit. In the case of two of the sections normal conditions of work were not reached until near the end of the year. The shortage of native labour during the year, together with the influenza epidemic, also detrimentally affected the year's operations. Another cause which adversely affected the profit was the frequent labour trouble and strikes which occurred among the white employees. In addition to the reasons I have just mentioned this company, in common with the rest of the gold mining industry, suffered by increased working costs attributable to the war.

Loan Necessitated.

As the small profit made was not nearly sufficient to meet the outlay required for capital expenditure and the payment of debenture interest and redemption it became necessary for this company to obtain financial as-

sistance, and arrangements were concluded whereby the Randfontein Estates advanced the amounts required from time to time. The liability to the Randfontein Estates under this arrangement amounted to £301,872 at the close of the year.

You will note on reference to the balance sheet that the debenture liability has been reduced by £102,900, representing the fifth instalment for redemption. The Randfontein Estates Company holds the entire debenture issue of this company, and, following on the practice of previous years and in order to save the unnecessary expense of having a drawing, additional debentures, amounting to £109,100, which were due for redemption on the 1st March, 1919, were purchased at par from that company. By these two purchases the debenture liability will be reduced by £212,000, which amount forms the major portion of the Randfontein Estates "loan account" appearing in the balance sheet.

The total development footage during the year amounted to 52,210 feet, representing driving, rising, winzing, cross-cutting, etc. Of this total 29,442 feet, representing driving on reef which exposed 83 per cent. payable, of an average value of 29.1 dwts. over 13 inches.

This, I am sure, you will consider highly satisfactory both as regards value and percentage of payable. I am also pleased to report that the reefs opened up on the lowest levels continue to be of good values and of high percentage payable.

Shortage of Native Labour.

Since the annual report was written conditions on the mine have not altered materially, though the results for the first quarter of this year were much more satisfactory than those for the last quarter of 1918, owing to the effects of the influenza epidemic having largely passed away. There remains, however, the same shortage of native labour. This is very serious at Randfontein, as it not only increases the working costs per ton, but it reduces the grade of the ore mined. This arises from the fact that the deeper and richer section of the mine cannot be worked in the necessary proportion to maintain the average grade in the mill. It is possible to obtain voluntary natives for the northern and poorer section of the mine, but these natives would simply leave if any attempt were made to transfer them to the southern section. Thus the shortage of labour at this mine means direct loss of profit owing to small tonnage crushed, and indirect loss owing to increase in working costs per ton crushed, and to the lower average grade of the ore crushed. The two bright features are first the continued satisfactory value of the development, and secondly the steady progress made in sinking the two new shafts. At the end of April the North Shaft was 2,664 feet deep and the South Shaft 2,506 feet. The first level at the North Shaft has been started at a depth of 2,500 feet. The first pumping station will be situated at this level, but the work there will not interfere with the continued sinking of the shaft. When it is considered what a great saving will be effected when the old shafts, which can scarcely be kept open, are replaced by the two new shafts, when the pumping, which now occupies some 130 pumps, is simplified, and when the new scheme of development is brought into operation, it will be seen that Randfontein will be practically a new mine. In the meantime the conditions there are difficult and trying; and though with an adequate native labour force profits would substantially improve, the position can never be satisfactory until the new work is completed.

The report and accounts were adopted. The retiring directors, Messrs. S. B. Joel and J. H. Crosby were re-elected, and the auditors reappointed.

RANDFONTEIN ESTATES.

Speaking at the 26th annual meeting of the shareholders in the Randfontein Estates Gold Mining Co., Witwatersrand, Ltd., Mr. John Munro, who presided, said: During the year the general revenue, including dividends and debenture interests, amounted to £218,519, which, together with discounts on debentures purchased, £7,964, made a total revenue of £226,483. Against this the expenditure representing general expenses, debenture interest, etc., totalled £115,924, leaving a surplus of £110,559 for the period. The debenture issue of the company was decreased by £68,600, representing the fifth instalment of redemption, and the issue now stands at £1,580,160. Further, £72,800 nominal value debentures were purchased during the year at a discount of £5,563 in order to meet the redemption due on the 1st March, 1919.

During the year directors, acting on the advice of your technical advisers, abandoned 1,088 claims on the farm Randfontein. These claims were of no value to the company, and by allowing them to lapse a saving has been effected in claim licence payments.

I have pleasure in informing you that negotiations with the Townships Board regarding the establishment of a township at Randfontein are reaching the final stages and before very long I hope that the necessary township permit will be issued by the Government.

During the year, owing to the reduced profit, it became necessary for your subsidiary company, the Randfontein Central, to borrow from this company. This money was required for the purpose of meeting its liability for debenture interest and redemption and the increased capital expenditure in respect of the two new vertical shafts, which, when in operation, will effect considerable economies, with resultant increased profits. The causes for the reduction in the Central Company's profits for the year under review are fully set forth in that company's annual report, a copy of which will be furnished you, and it is therefore unnecessary for me to enlarge on this matter here. The sum advanced to the Central Company at the end of the year amounted to £301,872. When last addressing you I pointed out that the prosperity of this company largely depends on the success obtained by its subsidiary, on account of its holding £2,980,441 shares out of the Central's total issued capital of £4,500,000, and it also holds the entire debenture issue in the same company, of which debentures to the amount of £2,431,300 are outstanding. Having this in mind, the directors loaned its subsidiary the required amount to meet its liabilities, aforementioned, and I am sure their action will meet with your approval.

The report and accounts were adopted.

The retiring director, Mr. N. J. Scholtz, was re-elected, and the auditors were reappointed.

VAN RYN DEEP.

The 14th ordinary general meeting of the shareholders of the Van Ryn Deep was held on May 28 in the Board Room at Consolidated Buildings. Mr. John

Munro presided, and in moving the adoption of the report and accounts, said:—The ore crushed during the year showed an increase as compared with 1917 of 12,680 tons. The yield was about 3d. per ton higher, but against that working costs had increased by a little over 1s. per ton, so that the gross profit of £627,753 17s. 9d. was about £10,000 lower than that of the previous year, mainly attributable to an increase in "mining" of 1s. 3d. per ton over the cost under this heading for the previous year. The rate of the dividends paid, viz.: 45 per cent., was maintained, the distribution amounting to £538,601 8s. 6d. The carry over to next year was £216,824 11s. 7d., after payments on account of miners' phthisis, £1,913 1s. 7d., income tax and dividend taxes, £88,042 7s. 8d., donations £2,640 3s. 4d., and depreciation £28. Mine stores, which appear at practically the same figure as at the end of 1917, have been steadily reduced since the close of the financial year, and the balance at the end of April was £59,515 17s. The ore reserves at 31st December were estimated at 2,445,759 tons, an increase of about 200,000 tons over 1917, with slightly-improved values and higher stoping width. The mine is well developed and excellent results may be looked for for many years to come.

Development results since the close of the financial year continue to expose reef of excellent width and value. The native labour supply is better than for a long time past, and, provided the falling off during the coming winter is not too severe, we hope to show an increase in the tonnage milled as well as in the scale of development. The Central and Eastern portions of your mine are as you know the important sections of the property, but with the increase in the labour supply arrangements are now in hand for re-starting development on the first and second levels west of the west shaft. In the lower levels on that side of the mine some satisfactory development has been done, especially on the ninth level, which has been driven for a considerable distance west with gratifying results both as to width and value.

Hoisting Plant Alteration.

The addition to the reduction plant, which will enable 54,000 tons per month being handled, was completed by the middle of the year under review, but, owing to the inadequate supply of native labour, it was impossible to supply that tonnage. In addition to the native labour shortage, for some time past the electrical portions of the two underground winding engines have given trouble, due to faulty construction. Recently stoppages have become more frequent, and it has now been decided to replace these electrical parts with two new machines which were purchased locally. The new machines are of a simpler type, as well as being more powerful. This will enable us to somewhat increase our skip capacity, which, for the larger tonnage the reduction works are capable of treating, has been rather on the small side. The estimated cost of this alteration to our hoisting plant is £11,000, and it is hoped to complete the work in from two to three months with little, if any, reduction in the scale of operations, as the present machines will continue working during the erection of the new machines, and the actual change over should only take a day or two. When these alterations are completed, and provided the native labour force keeps satisfactory, there ought to be no difficulty in supplying the mill with all the tonnage it is capable of treating.

During the year an Act was passed by the Provincial Council, and became law,

which provides for a tax on the taxable profits in excess of 10 per cent. of the gross revenue derived from the production of gold. In view of the fact that a case was being brought to test the right of the Provincial Council to levy this tax, your directors did not provide for the liability in the accounts now submitted. Unfortunately for the mining industry, judgment in the case referred to was given in favour of the Provincial Council, and an order has been granted authorising the collection of the tax upon condition that security be given for repayment should the Appeal Court reverse the decision of the local Courts. I may mention that the tax payable by this company is estimated at £22,264, and this amount has been paid, together with £245 4s. 2d. interest to 6th May, 1919.

Before closing my remarks I would like to congratulate shareholders on meeting under better auspices than during the last four years, when we were under the influences of a great and terrible war, with all its possibilities and uncertainties. No fewer than twelve of the mine employees on war work lost their lives, and to their relatives our sincere sympathy is extended.

The report and accounts were adopted. The retiring directors—Messrs. C. Marx and W. Dalrymple were re-elected, and the auditors reappointed.

GOVERNMENT AREAS.

A satisfactory state of affairs was disclosed at the ordinary general meeting of the shareholders in the Government Gold Mining Areas (Modderfontein) Consolidated, Ltd., which was held on May 28. Mr. J. Munro presided, and in the course of his speech said: I have pleasure in submitting for your adoption the directors' report and accounts for the year ended 31st December, 1918, and of congratulating shareholders upon the results which have been obtained. The quantity of ore crushed was slightly in excess of that for 1917; the yield was 3s. 5d. per ton higher, whilst the costs—due to the increased price of stores—were 8d. per ton higher. Owing to the higher value of the ore crushed, the working profit again showed a substantial improvement. The amount available for distribution, including £146,332 7s. 3d. carried forward from last year, was £1,043,916 13s. 5d., and, after deducting payments in connection with miners' phthisis, income tax, donations, also two dividends of 12½ per cent. and 15 per cent. respectively, absorbing £385,000, as well as the amount of the Government's share of profits (which has been paid), there remains a balance of £271,835 18s. 2d. to be carried forward. You will observe that no provision has been made in the accounts for the provincial gold profits tax. This company has been assessed for £8,221 8s. 2d. under this tax, but inasmuch as the agreement between the Government and the company appears to put the company in a better position towards contesting its liability to pay this tax than was the New Modderfontein Gold Mining Company in its recently decided case, the board are taking advice before making payment.

Your consulting engineer draws attention to the large amount of development carried out during the period under review, the cost of which has been charged to working costs. The gratifying point in connection with the year's development has been the large percentage of payability, viz.,

73.6 per cent. of an average value of 16.1 dwts. over 43 inches. The plan which accompanies the report will give shareholders a good idea of the wide distribution of the ore reserves, which at the end of the year were 9,445,000 tons of an increased value of half a pennyweight over practically the same stoping width. The consulting engineer is of opinion that, provided the necessary native labour becomes available, it would, in view of the large number of points of attack, be a comparatively simple matter to increase the ore reserves to almost any desired extent.

The capital expenditure of £66,350 includes the cost of the erection of five tube mills, with the necessary cones and tables, additions to mine equipment, and the completion of a fine recreation hall, as well as further dwelling-houses for employees.

Mine stores, which stood at £190,656 18s. 1d. at the end of 1917, were reduced during the past year to £178,781 15s. 3d. Since then a further reduction of about £15,000 has been effected.

Good Results Continue.

Since the close of the financial year the number of natives employed underground has substantially increased, and stood at 5,712 at the end of April, as against 4,322 for December, and an average of 4,907 for the whole of 1918. Development fell off somewhat towards the close of last year, but the present labour force has enabled the management to increase the scale of this work again, and it is hoped that the tonnage milled will also show some increase. As regards the values exposed in development, shareholders will have noticed the remarkable regularity in the percentage of payability, as well as in reef width, recorded in the quarterly reports. These good results, I am pleased to say, continue, whilst at certain points in the mine we have recently encountered reef of great width and remarkably high values. I feel satisfied that the ore reserves at the end of this year will show a further large increase over last year's figure, and I look forward with every confidence to continued and increased prosperity for this great company.

We meet to-day under more favourable auspices than obtained during the past four years of terrible war, and I earnestly hope that the peace which I trust will shortly be signed, and the League of Nations being formed in connection therewith, will render the possibility of future warfare extremely remote. We welcome with thankfulness the return of so many of our employees who volunteered for active service, and we deeply regret the loss of those fallen, which for the Barnato Group totalled 89. To their relatives we tender our sincere and respectful sympathy. I must express the regret of the Board at the untimely death, after many years of faithful service, of Mr. Sudlow, your late manager. He had been in bad health for some months before his demise, and it was hoped that the long leave granted him would restore his health. Unfortunately, the end came in October. Mr. M. J. Turner, who had been acting manager, has now been appointed manager of the mine.

Before resuming my seat I wish to record our thanks to Mr. White, our consulting engineer, to the head office staff, and to the managers and staffs of the mines of this group for the excellent services rendered by them.

The other speeches will appear in our next issue.

The report and accounts were adopted. The retiring director, Mr. John Munro, was re-elected, and the auditors were reappointed.

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Notes and News.

Diamonds in the Pretoria District.

We understand that a new discovery of diamonds has recently been made in the Pretoria District. The stones are reported to be of good quality; and the yield per 100 loads is said to be satisfactory.

* * * *

Modder Deep Share Splitting Scheme.

The Modder Deep share splitting proposal appears to meet with general approval. The circular issued by the company states: "In view of representations which have been made by many of the shareholders in the company, to the effect that at the Stock Exchange quotations ruling the negotiability of the shares is unduly restricted, it has been decided by the board of directors to submit to the shareholders of the company a proposal to sub-divide the existing £1 shares of the company into shares of the nominal value of 5s. each. In the opinion of the board this measure will be of particular benefit to the large number of small shareholders in the company, who are mainly resident in the United Kingdom."

* * * *

The Moffat Report.

A curious misprint crept into our report of the speech made by Sir Evelyn Wallers at the recent annual meeting of the W.N.L.A. The chairman, in our report, was made to state that the Moffat report found the conditions under which the natives worked on the Rand "unsatisfactory." This should read "satisfactory," the misprint being passed in the belief that the reference was to the legal disabilities under the Mining Regulations known as the "colour bar," animadverted upon by the late Mr. Moffat in his report. We are indebted to Colonel Pritchard, C.M.G., Director of Native Labour, for bringing the matter to our notice.

* * * *

Honours for South Africans.

Several South Africans prominent in the mining world are included in the latest Birthday Honours. The Administrator of the South-West Protectorate, Mr. Gorges, is made a K.C.M.G. The Secretary for Mines, Mr. H. Warrington Smyth, is given a well-deserved C.M.G., and Mr. Honey, the Resident Commissioner of Swaziland, is similarly honoured. Col. Raleigh Grey, C.M.G., C.V.O., of Salisbury, receives the K.B.E., and his many old friends on the Rand and in Rhodesia will rejoice at this signal mark of favour bestowed on the distinguished Rhodesian pioneer. Mr. C. E. Boyes, who recently reported on the native troubles on the Rand and is now Chief Magistrate of Cape-town, is given an O.B.E. for his war services.

* * * *

State Aid for Apprentices.

In view of several enquiries that have reached us we print the following official announcement from the British Ministry of Labour:—"The terms that the Government offer to assist apprentices who have had their training interrupted by service with the Navy, Army or Air Force, and who have come back to civil life, have now been issued. Employers or apprentices who desire information about the scheme can obtain it by applying to the nearest Employment Exchange in their neighbourhood. Each industry which proposes to take advantage of the Government's offer has prepared, or is preparing, through its Joint Industrial Council, or, where such does not exist, through some other body representative of the industry, a special scheme dealing with the application of the general plan to its own needs. Schemes have been completed for the Engineering, Furniture Manufacturing and Shipbuilding industries, and other schemes will follow shortly. As soon as a scheme is approved copies of it are sent by the Employment Exchanges to every employer and secretary of a Trade Union concerned in the scheme, together with copies of the necessary application forms; and further copies are lodged at the Exchange for the information of enquirers.

"C.M.S." Directorate.

Official intimation has been received from London to the effect that Mr. Ernest Oppenheimer has been appointed Resident Director in South Africa of this company, and that Mr. John Alexander Agnew, the well-known mining engineer, has joined the board of the company.

* * * *

"The Journal of Industries."

We are much obliged to the Government Department responsible for the *Journal of Industries* for sending us each month a free copy of that publication. The good intentions of the editor, however, are frustrated, as far as we are concerned, by the fact that the copy sent to us is invariably in Dutch; and as our knowledge of Dutch is limited to the colloquial variety, we are unable to follow the valuable technical articles in the journal through that medium. The English edition would be of much more service to us.

* * * *

Southern Van Ryn Reef.

The London secretary of the Southern Van Ryn Reef Gold Mining Company announces that the Treasury has now granted the company's application for a licence to issue new shares against options exercised. Cable advice of the Treasury's consent to the issue has been dispatched to the head office in Johannesburg, and the applications received having already been mailed out, the allotment will doubtless be made shortly.

* * * *

Anglo-French Exploration.

Although the directors of the Anglo-French Exploration Co., Ltd., recommend the same dividend for 1918 as for 1917, namely, 1s. 6d. per share, it turns out that the profit fell off last year by £25,500 to £32,500. This is, however, mainly due to less than £10,000 profit having been made this time from sales of shares, against over £30,000 from that source in 1917. The carry forward will be reduced by something over £7,000 to £34,275. The surplus of assets, including cash, over capital and liabilities has declined from £81,700 to a little under £63,000. The company has still holdings (of which, however, no details are given) in seven Eastern Rand and four Central Rand propositions; in a Transvaal colliery; in a Rhodesian land company; in the Hollinger Consolidated Gold Mines in Canada; in the Magadi Soda Co. in East Africa, and in the East Pool and Agar mine in Cornwall.

* * * *

Newdwarf Gold to Open Up Van Ryn Reef.

The secretary of Newdwarf Gold, Ltd., in a circular to the shareholders, states:—"Referring to the speech of the chairman at the annual general meeting held on March 28 last as to the Board's proposed mining arrangements, I am instructed to advise you that the agent in London of the Klipwolf Syndicate has informed your Board that Mr. Thorburn, a well-known South African mining expert of great practical experience, has expressed the confident opinion that he can point out the Van Ryn reef on the company's farm Wolfhoek, and that very little cost or time would be required to open it up. In these circumstances, the necessary steps are being taken to obtain a formal report to the company from Mr. Thorburn, to whom it is proposed to entrust the work of opening up the reef upon the farm in question, with the view of confirming his conclusions."

* * * *

Development at Three Union Corporation Mines.

Quarterly reports of the three productive subsidiaries of the Union Corporation, Ltd., for the three months ended with March 31, 1919, have just been issued, and from these we take the following particulars relative to development. Modder Deep: Total footage, 1,652; total footage sampled on reef, 1,040. The payable reef disclosures were: 735 feet, having an assay value of 16.8 dwts. over 45 inches. Geduld Proprietary; Shaft sinking, 985 feet. Development—Total footage, 3,761; total footage sampled on reef, 3,660. The payable reef disclosures were: 935 feet, having an assay value of 15.7 dwts. over 37 inches. Princess Estate: Shaft No. 1 (vertical)—Sinking (incline portion), 17 feet; sundries,

108 feet. Total, 125 feet. Development: Driving, 399 feet; winzes, 185 feet; raises, 273 feet; cross-cuts, 122 feet. Total, 979 feet. The footage sampled was as follows: South Reef, 130 feet, averaging 9.5 dwts. over 26 inches; Main Reef, 685 feet, averaging 7.5 dwts. over 42 inches. It is estimated that the payable ore (based on the milling width) developed by the above footage is: South Reef, 2,382 tons; Main Reef, 16,092 tons. Total, 18,474 tons. These figures are subject to re-calculation at the end of the year, when block values are made out.

* * * *

The Knights Deep Position.

The following is a summary of the operations of the Knights Deep Company for the quarter ended 30th April, 1919: The development footage accomplished during the quarter amounted to 1,480 feet, the footage sampled being as follows: Main Reef, 565 ft., reef width 35 ins., reef value 7.0 dwts.; South Reef, 870 ft., reef width 26 ins., reef value 7.0 dwts.; tons milled, 248,700; loss on working (including sundry revenue), £180. Appropriations during the quarter in respect of special expenditure due to war, contributions to miners' phthisis compensation fund, additions and renewals fund, Government taxation, etc., amounted to £2,115. Shortage of native labour continued during the quarter with consequent adverse effects upon mining operations. Influenza having abated in Portuguese East Africa, recruiting there has been recommenced. An improvement has taken place in the numbers of natives coming from British South African territories and recently the native labour position generally has somewhat improved, which if continued should gradually improve results from operations.

* * * *

The Diamond Market.

Writing on the state of the diamond market in mail week, the *Financial News* says:—"Application for all sights vastly exceed the amounts available, and the Diamond Syndicate and others experience considerable difficulty in making satisfactory allotments, i.e., in satisfying clients. Everything the syndicate had on offer went at once, almost the whole of it to the Continent. In a previous report we mentioned a rumour that Germans were buying stones through neutral countries. The rumour is even more persistent this week, the suggestion being that on account of fears of Bolshevism Germans with capital are converting it into diamonds, as being more portable, less liable to discovery, and as having a substantial value whatever happens. Owing to circumstances, the rumours are not altogether capable of proof; but, seeing that they are so strong, it is possible that there is some substratum of truth in them. The sellers of diamonds on this side cannot, of course, control the destination of the goods; they dispose of them for cutting purposes, and, if at times they reach enemy hands, it presumably cannot be prevented. The demand from Belgium for the consignment of Congo goods that reached London a week or so ago is extraordinary, and the market is said to be rampant. The consumption of stones is enormous, though in connection with the inquiry there may be some kind of camouflage. American buyers are still here, some of the most important New York houses waiting to pick up the best of the goods on sale. In fact, America seems to be insatiable."

* * * *

Brakpan Mines.

In an official note attached to the May returns from Brakpan it is stated:—"During the period following the influenza epidemic the value per ton of the reef milled was purposely increased to prevent the monthly profit being affected by the decreased tonnage treated. The improvement in the yield has since continued, owing to certain stope faces giving a value in excess of that indicated by the payable ore reserves. As this improvement is regarded as a temporary phase, the excess gold, amounting to 6,643 ounces, has been taken out of the plant and placed to reserve. As indicated in the Chairman's speech at the annual meeting, the amount of gold in reserve—which will be added to or drawn from as necessity arises—will be published monthly."

TOPICS OF THE WEEK.

THE LATEST MINERS' PHTHISIS LEGISLATION.

THE people connected with the mines have spent most of the week studying the latest product of the Parliamentary machine in regard to miners' phthisis. It will be remembered that the Bill recently brought forward by the Government, based mainly on the Majority Report of the Miners' Phthisis Commission, was, after its second reading, referred to a Select Committee. From this stage it has now emerged, a very different measure from the first draft, and more nearly approximating to the recommendations of the Minority, or Sampson, Report of the Commission. In as few words as possible, the chief provisions are as follows: There will be one fund, the compensation fund. The miners' contribution will cease after August 1 next. The compensation fund will be maintained by quarterly levies on the scheduled mines, estimated on the requirements of the fund, on the following basis: 45 per cent. on the basis of the earnings of employees (other than native labourers), 35 per cent. on the basis of the silicosis rate (determined by the Phthisis Bureau, and spread over the mines according to the period of service in each mine of persons who reach the commencing stage of silicosis), and 20 per cent. based on the income tax paid for the previous year. In addition to the period of service worked, the Minister may take into consideration the following factors in determining the silicosis rate, namely, the results of dust-sampling investigations and reports of inspectors of mines as to breaches of any law or regulation prescribed for the laying of dust or for the improvement of ventilation or the prevention of miners' phthisis. The Medical Bureau will be constituted as in the previous law. A right of appeal is given against the decisions of examiners to members of the bureau who have not taken part in the previous examination, two of whom may be honorary members of the bureau. No change is made in the constitution of the Board, who, however, are given further powers to establish co-operative workshops and acquire land for that purpose, as also to initiate and carry out schemes for saving and investment on behalf of the miners while working. The whole cost of the administration of the Act, instead of one-half as heretofore, will be borne by the State. Three stages of silicosis will be compensable; ante-primary, when physical signs or damage short of definite physical signs of silicosis are evident; primary, when in addition to the before-mentioned signs the capacity for work is impaired though not seriously, and secondary when the capacity for work is seriously and permanently impaired. Pure tuberculosis (which now has a wide definition) is treated for the purposes of compensation as primary silicosis and tuberculosis complicated by silicosis as secondary silicosis, provided the sufferer was employed upon underground work within twelve months prior to the periodical examination. Miners discovered at the periodical examinations to be suffering from tuberculosis will be excluded from working on scheduled mines and compensated accordingly. Miners discovered to be suffering from silicosis in a compensable degree after the commencement of this Act will be notified, and if they continue at work underground on the scheduled mines longer than three months after receiving such notification, they will only receive the benefits awarded at that stage of the disease of which they were notified. If, however, they leave the mines before the expiry of three months and afterwards grow worse they will receive further awards. Future awards for whites, coloured and natives will be based on the average earnings of the beneficiary during the last 156 days he has worked, prior to making application or receiving notification that he was suffering in a compensable stage of the disease. The Board, however, are given powers to fix the average earnings arbitrarily when they cannot otherwise determine. Benefits to future beneficiaries will be awarded as follows:—Ante-primary: One year's earnings in accordance with schedule, viz., up to £350, the whole; £350 to £450, add one-half; over £450,

add one-quarter, payable in one sum. Primary: One and a half years' earnings in accordance with the above schedule, payable in one sum, but the Board to have discretionary power in certain events to pay the sum in monthly instalments, when interest at the rate of $4\frac{1}{2}$ per cent. per annum will be added. Secondary: Monthly allowance for life based on the following schedule: For the miner, if earnings did not exceed £20 per month, one-half; £20 to £28 6s. 8d., add one-quarter; over £28 6s. 8d., add one-twentieth. For his wife, if married to her before the date of the award, one-fifth of the total amount payable in respect of the miner. For each legitimate child of the miner (not exceeding three), until such child reaches the age of 16 years, one-tenth of the total amount payable in respect of the miner. The machinery for the examination and payment of compensation to natives is revised, and the amounts payable are higher than before. A schedule sets out the occupations covered by the Bill. The notable additions are sample and assay room employees and underground blacksmiths. What the Bill in its latest form means to the industry in increased cost it is difficult to state offhand. Its provisions are being carefully scrutinised by the Chamber of Mines, and we may expect that body to make its voice heard pretty plainly in regard to the obvious anomalies it contains. The Assembly is now debating it, and will, doubtless, listen to the representations made on behalf of the mines. It is to be hoped that due consideration will be given to the plight of the low-grade mines, faced with this new burden superimposed upon those already borne.

The Mint.

SOME interesting facts regarding the history of the Pretoria Mint are given in a memorandum prepared by the late Secretary for Finance. It appears that the Pretoria Mint was established by the late South African Republic, under a concession granted to the National Bank of the Republic, now the National Bank of South Africa, Ltd., in 1892, when the total gold production of the Rand was about two millions sterling a year. The largest coinage was in 1900, when 788,000 sovereigns were minted. The maximum capacity was estimated at £3,000,000 a year. The concession to the National Bank was cancelled by the Transvaal Crown Colony Government, which took over the Mint buildings, machinery and appurtenances. A comprehensive report on the structure and its equipment was drawn up in 1901, under the instructions of the High Commissioner, by Major Fowks, R.E., of the Public Works Department. This was forwarded to the Colonial Office with a governing despatch from the High Commissioner, who stated that "it seemed to him, in view of the position of the Colony as a centre of gold production, that there were strong arguments in favour of the establishment of a branch of the Royal Mint" in the Transvaal; arguments, he added, which "were strengthened by the fact that they had a well-equipped Mint in working order." In reply, the Colonial Office transmitted Minutes from the Imperial Treasury and the Deputy Master of the Royal Mint intimating that the existing site and buildings at Pretoria were unsuitable for a branch Mint, but that, if the Transvaal Government were prepared to go to the expense of providing a more adequate site and buildings, and to make the necessary financial arrangements for working a Mint, no objection would be offered to the establishment of a branch. There the matter rested until the outbreak of war, when, in order to be prepared for any contingency, the Mint was overhauled and placed in working order for the production of gold coins. The Imperial authorities assented to the minting of a local gold coinage as a purely temporary expedient if war circumstances rendered such a step unavoidable, but the necessity never arose. It is estimated that a mint situated at Pretoria dealing with 30 millions sterling a year, would involve 20 cars a day running between Johannesburg and Pretoria, a distance back and forward of eighty miles. The provision and policing of transport to this extent and of this description would mean throwing away a large part of the saving to the gold industry, which is the primary object of the proposed Mint.

PROVINCIAL TAXATION AND THE MINES.

How it Affects the Rand—An Interesting Table.

The taxation imposed by the Transvaal Provincial Council on the Witwatersrand gold mining industry, which has been and still is the subject of litigation, has been referred to at all recent annual meetings, and on one or two occasions there has been some pretty straight speaking on the iniquity of the imposition. The right of the Transvaal to collect such taxation is still in question, but in the meantime it will be of interest to note the incidence of the taxation on various companies and the amounts of money involved. The tax is a fluctuating one, depending upon the ratio of profit to the recovery value of the ore treated, and it does not affect companies obtaining a less proportion of profit than 10 per cent. of the value of ore treated. Above 10 per cent. and up to 15 per cent. the tax is 1 per cent., increasing by one-tenth of 1 per cent. for each additional 1 per cent. of profit, to a maximum of 4 per cent. The tax would work out as 1 per cent. on a ratio of 15; $1\frac{1}{2}$ per cent. on a ratio of 20; 2 per cent. on a ratio of 25; $2\frac{1}{2}$ per cent. on a ratio of 30; 3 per cent. on a ratio of 35; $3\frac{1}{2}$ per cent. on a ratio of 40; and 4 per cent. on a ratio of 45 and over. Taking the returns for last year as a basis, the following are the companies affected by the tax:

RATIO OF PROFITS TO RECOVERY VALUE IN 1918.

Company.	Value per ton.		Profit per ton.		Ratio per cent.	Provincial tax on profits. Per cent
	s.	d.	s.	d.		
Brakpan	35	6	11	10	33.3	2 9-10
City and Suburban	34	1	3	9	11.0	1
City Deep	38	10	13	4	34.3	3
Cons. Langlaagte	25	3	6	2	24.4	2
Cons. Main Reef	28	0	3	10	13.6	1
Crown Mines	27	7	4	6	16.3	1 2-5
Ferreira Deep	32	4	8	0	24.7	2
Geduld	29	1	9	2	31.5	2 7-10
Government Areas	33	1	13	5	40.5	3 3-5
Langlaagte	24	3	5	2	21.3	1 7-10
Meyer and Charlton	65	9	40	2	61.0	4
Modder B.	42	3	22	0	52.0	4
Modder Deep	40	10	23	4	57.1	4
New Modder	46	3	24	7	53.1	4
New Unified	18	11	3	8	19.3	$1\frac{1}{2}$
Robinson	21	10	2	8	12.2	1
Rose Deep	23	4	4	7	19.6	$1\frac{1}{2}$
Simmer and Jack	22	4	3	10	17.1	1 3-10
Springs	42	9	19	10	46.3	4
Sub Nigel	52	10	18	11	35.8	3 1-10
Van Ryn	21	5	4	3	19.8	$1\frac{1}{2}$
Van Ryn Deep	43	9	23	2	52.9	4
Village Main Reef	29	8	6	11	23.4	1 9-10
Wit. Deep	23	0	3	11	17.0	1 1-5
Wolluter	21	2	3	7	14.8	1

PERSONAL.

Sir H. Ross Skinner has left on a three weeks' shooting trip in Rhodesia.

Mr. E. Birkenruth, of the Consolidated Gold Fields of South Africa, Ltd., has left for England this week.

Capt. R. A. Ironside, Joint Managing Director of R. Hudson, Ltd., in South Africa, has returned from active service.

The death is announced from London of Mr. F. A. Gillan, late Chairman of the Van Ryn Estate and G.M. Co., Ltd., and father of Mr. F. A. Gillan, formerly of Johannesburg.

Captain T. F. Bilbrough, who has been serving in France, has returned to Johannesburg and has resumed the managing secretaryship of the Rand Mutual Assurance Association.

The report has been issued of the Select Committee appointed by the House of Assembly on 28th February and 3rd March on the irrigation projects described and recommended by the Director of Irrigation in the latest departmental Blue Book. Among the rest the Committee considered the proposed Upper Modder River irrigation scheme. The Committee was satisfied that the scheme is a sound one, and recommended a loan of £45,000, subject to a contribution of £75,000 from the Bloemfontein Municipality, as approved by the ratepayers of that centre. The Committee considered the petitions presented by the lower riparian owners protesting against the construction of the proposed works, excepting under certain conditions, assuring to those lower owners a supply of water. The Committee was satisfied that these lower owners have no reasonable grounds for objecting, and are not justified in imposing any special conditions on the Upper Modder River Board.

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THE COUNTRY AND THE GOLD LAW.

Alleged Inequity of Existing Legislation—Inordinate Taxation and the Fleecing of the Small Man—Encouragement not Discouragement Required—Grants in Aid for Prospectors—The Position of Claimholders on Active Service—The Taxing of Enterprise an Unsound Policy.

[By a Special Correspondent.]

DESPITE the present activity in the Heidelberg District, it is to be observed from the last return of prospecting permits and prospecting and diggers' claims issued by the Government Department of Mines that prospecting permits and prospecting claims held at April 30th, 1919, numbered less than they did at the end of last year. At the 30th June, 1918, the prospecting permits held in the Transvaal numbered 805. Six months later this number had declined to 571, and at the end of April this year it had further declined to 395.

A LOW GRADE FIELD.

To me it is not in the least degree surprising that such reductions have taken place. But on the other hand, what does amaze me is that the ordinary public of the country should be prepared to spend any money at all on prospecting under the existing gold laws. Such legislation as exists here would not be tolerated in other portions of the British Empire. Australia and Canada possess richer deposits than are found in the Transvaal, and the legislation in those countries is very much more favourable to the prospector than it is in South Africa. The Gold Fields of the Witwatersrand, though fairly consistent in value over large areas, are, in reality, of low-grade character. In an "all white" state only limited portions of them could be worked at a profit, and it is only on account of the cheap native labour supply that South Africa is the leading gold-producing country of the world. But the attitude of the Government towards the Mining Industry, which is the mainstay of the country, is the attitude of a blood-sucking imposition which might easily ruin the richest auriferous deposits on earth. Not only are the big mines subjected to every form of taxation imaginable (and unimaginable) by the Union Government; they are imposed on by the Transvaal Provincial Executive as well.

"VAMPIRE TACTICS AND THE SMALL MAN."

These vampire tactics seriously affect the operations of the large companies. But the gold law does much more than this to the little companies, the syndicates and the small men; it spells ruin for them in a very short space of time unless early efforts are rewarded by the discovery of a "Bonanza." It is this latter point which I wish to dwell on, particularly here—the inequity of the Gold Law towards the man with a limited amount of capital behind him, who is seeking to establish a profitable gold proposition. If he succeeds he is going to benefit the State much more than he will benefit himself. For every pound in profit that is taken out of the ground by him, probably at least three pounds will accrue to the country at large through expenditure on capital and current accounts and taxation. This being so, one would imagine that it would be sound business on the part of the Government to do everything in its power to encourage enterprise with a view to the establishment of additional working mines, of which South Africa, as well as the world at large, is in sore need. On the contrary, however, the policy of the Government inclines towards the discouragement of prospecting and preliminary development. The view is held by many sound-thinking men that it would be a far more business-like procedure to forego the payment of claim and diggers' licences, and instead of taxing adventitious wealth, to assist prospectors and developing syndicates by grants against equipment, diamond drilling and essential stores.

REPRESENTATIVE VIEWS.

I met a man the other day who is engaged in developing a gold prospect on the Witwatersrand. He is by no means a millionaire, but he is a shrewd and level-headed business man, who is spending his own money on the development of his property, and the view he represented to me was briefly as follows:—

In the "old days" when a block of ground lapsed, that block was thrown open for pegging, or else was sold by auction. My chances then were as good as anybody else's, but they are not so to-day. The Milner Proclamation, which, I presume, was the result of a war fought for the rectification of injustices, came into effect after the Peace of Vereeniging. Under the Milner Proclamation no ground could be pegged unless declared open by the Mines Department. In other words, ground open when the Anglo-Boer-war started was not open when that war ended. This anomalous position was maintained by the Proclamation of 1908. The Milner Proclamation was never rescinded, but perpetuated by the Proclamation of 1908. Under our existing Gold Laws the Government Mining Engineer must be not only satisfied that the ground in question contains gold, but also that it contains gold in payable quantities. All ground on the Witwatersrand has been proclaimed, but it cannot be pegged.

STATE, FARMER AND PROSPECTOR.

Before ground is open for pegging the State calls for public tender, and what chance has the small man for a big area? The whole procedure is only a matter of form, and resolves itself into a farce. Under the existing legislation the rights of the prospector are lost, the State loses revenue from licences, and the farmer who is entitled to one-half licence money is a loser because he does not know when, if ever, his farm is going to be cut up by the Mining Interests.

THE CLAIMS OF THE SOLDIER PROSPECTOR.

Instead of taxing the prospector and putting every obstacle in his way, the Government should give him every encouragement. There is another matter in connection with the existing legislation which calls for redress, and that is

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in regard to prospectors and claim-holders who have gone on active service. Section 103 of the Gold Law makes provision for men called up "on commando," but the prospector or claim-holder who went oversea is given no mercy by the Government, if, through absence in the Empire's cause, he is unable to keep up his licences."

CRIPPLING THE COUNTRY'S BACKBONE.

The foregoing statements, it seems to me, pithily express the opinions of one who has learned his Gold Law in the stern school of experience, and they are, to my way of thinking at any rate, sufficiently weighty to demand investigation by those who are entrusted with the government of this country. In the Union the farmer is privileged in every respect, and at the expense of the Gold Industry. A man returning from active service can obtain grants in aid if agriculture is his livelihood. But the prospector or small

mine owner can obtain nothing. Agriculture in this country lives on the Mining Industry as a blood-sucking Tse Tse fly lives on the buffalo. Take away gold mining, and what on earth is left to support the million and a quarter whites and five million natives of South Africa? Nothing! And yet what is the attitude of the Government to the Gold Mines? The capitalistic section is taxed and made to pay for sixty per cent. of the country's revenue, and the small-man section is discouraged and fleeced in every possible manner until, in ninety-nine cases out of a hundred, he abandons his claims in despair. The Government must be compelled to realise the value of our gold fields, and give to their development every assistance in its power. If not, Mr. Editor, then, as I have already written, you will soon see grass growing in the streets of Johannesburg and geraniums on the window sills of the cheap flats in the Corner House.

Barnato Group.

The results of operations of the Barnato group for May are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	45,800	£56,606
Ginsberg	75	10,100	10,586
Government Areas	200	125,000	218,788
Langlaagte Estate	200	42,200	53,407
New Primrose	100	20,300	18,651
New Unified	60	12,200	12,024
Randfontein Central	600	144,000	166,162
Van Ryn Deep	90	49,600	103,492
Witwatersrand	215	35,500	42,781
Totals and averages ...	1640	485,000	£682,497

April totals 1630 460,420 £658,419

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit including Sundry Revenue.
Consolidated Langlaagte ..	£44,729	19.532	£12,051
Ginsberg	10,636	20.451	39
Government Areas	126,026	20.164	93,305
Langlaagte Estate	44,382	21.034	9,206
New Primrose	16,228	15.988	2,503
New Unified	10,190	16.704	1,865
Randfontein Central	156,803	21.765	10,194
Van Ryn Deep	50,267	20.269	54,130
Witwatersrand	37,177	20.945	7,123
Totals and averages ...	£496,438	20.472	£190,416

April totals £482,085 20.941 £180,785

Monthly Gross Profit, 1919.—January, £162,943; February, £154,054; March, £179,310; April, £180,785; May, £190,416.

Albu Group.

The May operations of the producing mines of this group were as follows:—

Company	Tons Crushed.	Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	14,800	£16,597	22.43	£16,641	£44
Meyer & Charl.	14,450	16,669	23.07	39,974	23,305
New Goch ...	16,700	13,993	16.76	13,469	*524
Roodepoort Un.	23,800	24,496	20.59	22,502	*1,994
Van Ryn Est...	35,900	29,163	16.41	31,619	5,156
West Rand Co.	33,120	37,430	22.60	38,837	1,407
	138,770	£138,618	19.98	£166,012	£27,391

* Loss.

Consolidated Mines Selection Group.

The following are the results of operations for the month of May:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines	140	48,800	24/ 9.643
Springs Mines	80	36,070	24/ 6.944
Totals and averages ...	190	84,870	24/ 8.495

	Value of Gold declared.	Yield per Ton.	Working Profit.	Working Profit per Ton.
Brakpan Mines ...	£91,024	37/ 3.657	£30,503	12/ 6.014
Springs Mines ...	67,487	37/ 5.042	23,160	12/ 10.098

Totals & averages £158,511 37 4.246 £53,663 12 7.751

Brakpan Mines.—During the period following the influenza epidemic, the value per ton of the reef milled was purposely increased to prevent the monthly profit being affected by the decreased tonnage treated. The improvement in the yield has since continued, owing to certain stope faces giving a value in excess of that indicated by the payable ore reserves. As this improvement is regarded as a temporary phase, the excess gold, amounting to 6,643 ozs., has been taken out of the plant and placed to reserve. As indicated in the chairman's speech at the annual meeting, the amount of gold in reserve, which will be added to or drawn from as necessity arises, will be published monthly.

Union and Rhodesian Trust.

The report of the Union and Rhodesian Trust, Ltd., for 1918 is of special importance, not only in view of the recent revived market interest in the shares, but also in view of the inclusion of audited accounts for the three months ended March 31 last. The last-mentioned showed that in this short period a profit of £34,894 was earned, against a loss, under war conditions, of nearly £3,000 for the whole of 1918. After adding £37,189 premium on issue of shares and deducting the debit balance brought in there was £7,093 to be carried forward as at March 31. Accordingly the directors now declare a maiden interim dividend of 2s. 6d. per share. The whole of the authorised capital of £100,000 in £1 shares is now issued and fully paid, so that the time is now convenient for the directors' proposal to raise the capital to £200,000 in 5s. shares and to offer 100,000 new 5s. shares to existing shareholders at par on the basis of one new share for each £1 share (to be converted into four 5s. shares) now held.

THE RAND'S ORE RESERVES.—I.

Position at the End of 1918—Figures for Fifty-one Companies—Ninety Million Tons of Payable Ore—A Decline of Six Million Tons—Higher Costs and the Elimination of Low Grade Reserves—The Stock-in-Trade of the Industry at the Caprice of Government and Labour—Huge Tonnages of Low Grade Ore Awaiting a Favourable Swing of the Pendulum—How the Country would Benefit.

A FEW weeks ago we published a preliminary table exhibiting the ore reserves of the Rand as at the end of last year. The table was incomplete, inasmuch as figures for 1918 for all companies were not then available. We have since secured these and are now enabled to give the schedule in as complete a form as the most recently published reports and technical statements allow. The majority of the tonnages and values given below are those developed and valued as at December 31st last. Where such figures are not available, the statistics are culled from the last annual reports published. We have often remarked on the lack of uniformity exhibited in official declarations as to the ore in reserve. No one can realise to a proper degree how great this dissimilarity between the returns of different companies is until an attempt has been made to prepare such a schedule as is given hereunder. Some companies declare their developed ore in terms of mining tons, others in terms of milling tons; that is to say, mining tons subject to deductions on account of sorting. In some instances one comes across references to suspense accounts in ore reserve statements. Certain companies state the amount of ore recoverable in shaft and stope pillars, etc.; other companies do not enlighten one in this respect. These are but a few of the differentiations to be observed. There are, too, naturally many variables resulting from different thicknesses of reef, and therefore different stopping widths, etc., in different mines. Furthermore, as working costs vary materially as between one mine and another, the pay limits vary largely. These latter inconstant factors are, of course, decreed by the conditions peculiar to each mine, and are thus inevitable; but we certainly think it would be to the great advantage of shareholders were the methods of declaring reserves, as between different groups and different mines, brought more closely into line. The outstanding feature of the year's work on the Witwatersrand in regard to ore reserves is that although development has been "speeded up" on the Far East Rand the increase in working expenditure has compelled the elimination of millions of tons of low-grade ore from the estimates of payable reserves. Since the outbreak of hostilities in Europe the costs of operation on the Rand have increased by the equivalent of $1\frac{1}{4}$ dwts. per ton, and in consequence large areas formerly reckoned profitable are now below the pay limit whilst at the same time there has been a general increase in the value of "pay" ore on account of the rise in costs.

A TOTAL OF NINETY MILLION TONS.

The total payable ore reserves arrived at in the appended estimate are 89,905,000 tons, which is approximately a decline of six million tons compared with the estimates of a year ago.

THE PAY FACTOR.

Having regard to the present critical position of many of the gold mines, we do not intend to hazard any hard-and-fast figures as to what this tonnage of ore—the stock-in-trade of the industry—may mean to shareholders in dividends, or to the country in working costs. Obviously the accumulation of such a tonnage of ore ready for stopping makes for industrial stability. But it must be remembered that the Rand is largely at the mercy of legislation, labour difficulties, and a thousand and one other factors. It is, in fact, at the caprice of the Government, the agitator, and the "coloured gentleman" to a degree which deters us from venturing predictions as to the ultimate dividend value of the ninety million tons above arrived at. In the above calculations no account has been taken of the many millions of tons of low-grade ore—the accumulations of years of exploitation—which are standing developed in the mines. Much of this low-grade ore is verging on the profit line. It needs but a happy swing of the pendulum of the industrial clock to transfer several millions of tons from the unprofit-

able to the profitable side of the Rand's ledger and thereby not only benefit the industry but immeasurably improve the finances and outlook of the whole country.

FIGURES FOR FIFTY-ONE MINES.

The complete schedule is as follows:

	Tons.	Dwts. per Ton.	Over a Stopping Width of Ins.
Aurora West	242,200	5.6	41.6
Bantjes Con.	95,000	6.3	—
Brakpan	2,718,000	8.7	68
Cinderella Cons.	1,024,800	7.0	—
City Deep	3,312,700	5.6	66
City and Suburban	348,200	7.8	57
Con. Langlaagte	2,103,000	6.2	51
Cons. Main Reef	1,425,870	7.3	53
Crown Mines	8,298,100	6.4	65
Durban Road, Deep	1,078,500	6.5	49
East Rand Prop.	2,268,000	6.5	59
Ferreira Deep	932,400	8.0	—
Geduld Proprietary	2,510,600	7.5	61
Geldenhuis Deep	1,549,600	5.9	53
Ginsberg	59,194	5.7	51
Glencairn	—	—	—
Government Areas	9,445,000	8.0	78
Jupiter	671,000	5.98	—
	*76,000	5.7	—
Knight Central	275,000	6.9	—
Knights Deep	1,671,000	4.43	—
	*83,000	5.03	—
Langlaagte Estate	1,036,200	6.9	52
Luipaardsvlei Estate	645,000	5.51	—
Meyer and Charlton	504,500	15.84	53.6
Modder B.	3,378,000	9.2	62
Modder Deep	3,450,000	8.8	78
Modder East	605,000	8.3	56
New Goch	111,670	5.6	49
New Heriot	223,420	7.12	49
New Kleinfontein	2,048,000	5.78	59.5
New Modder	9,000,000	8.6	65
New Primrose	65,690	6.1	49
New Unified	180,840	6.5	46
Nourse Mines	1,513,600	6.8	51
Princess Estate	380,000	7.2	37
Randfontein Central	1,254,000	6.8	50
Robinson	322,000	—	—
Rose Deep	2,909,520	5.3	71
Robinson Deep	1,632,000	6.9	—
	*85,000	6.42	—
Rooodepoort United	223,000	6.02	41
Simmer and Jack	1,538,000	5.67	—
	*211,000	4.98	—
Simmer Deep	932,000	5.02	—
	*42,000	5.15	—
Springs Mines	2,368,000	9.3	64
	*2,256,062	8.69	63
Sub Nigel	387,000	10.3	—
	*36,000	9.8	—
Van Ryn	1,347,916	5.6	52
Van Ryn Deep	2,445,760	9.0	70
Village Deep	2,327,200	6.3	62
Village Main Reef	628,150	7.1	—
West Rand Cons.	1,208,300	6.1	51
Witwatersrand	1,390,000	6.0	71
Witwatersrand Deep	953,665	8.3	56
Wolluter	856,870	5.8	63
	\$436,000	—	—

* Partial. † Plus reclamation. ‡ Revised February, 1919.
§ Suspense.

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SEVEN CORNER HOUSE MINES IN THE MARCH QUARTER.

What Development Disclosed..

The following is a synopsis of the development results secured at the undermentioned companies under the control of the Central Mining and Investment Corporation in the quarter ended with March last:—

CITY DEEP.				
Total footage	...	...	...	4,437 feet.
Footage sampled on Main Reef Leader	...	...	...	1,100 feet.
The payable reef disclosures were as follows:—				
	Feet.	Width.	Assay Value.	
		Inches.	Dwts.	
Main Reef Leader	960	38	17.2	

CONSOLIDATED MAIN REEF.				
Total footage	...	...	...	4,725 feet.
Total footage sampled on reef	...	...	...	2,810 feet.
The payable reef disclosures were as follows:—				
	Feet.	Width.	Assay Value.	
		Inches.	Dwts.	
Main Reef Leader	1,660	8	47.3	
South Reef	25	18	18.8	

EAST RAND PROPRIETARY.				
Total footage	...	...	...	2,228 feet.
Total footage sampled on reef	...	...	...	1,370 feet.
The payable reef disclosures were as follows:—				
	Feet.	Width.	Assay Value.	
		Inches.	Dwts.	
Main Reef	10	29	8.0	
Main Reef Leader	815	26	26.2	
Composite Reef	100	35	13.1	

GELDENHUIS DEEP.				
Total footage	...	...	...	1,868 feet.
Total footage sampled on reef	...	...	...	1,435 feet.
The payable reef disclosures were as follows:—				
	Feet.	Width.	Assay Value.	
		Inches.	Dwts.	
Main Reef	265	37	12.3	
Main Reef Leader	60	16	21.3	
South Reef	380	24	17.2	

NOURSE MINES.				
Total footage	...	...	...	4,317 feet.
Total footage sampled on reef	...	...	...	2,120 feet.
The payable reef disclosures were as follows:—				
	Feet.	Width.	Assay Value.	
		Inches.	Dwts.	
Main Reef	60	32	9.6	
Main Reef Leader	560	21	17.9	
South Reef	610	25	15.5	

ROSE DEEP.				
Total footage	...	...	...	1,369 feet.
Total footage sampled on reef	...	...	...	807 feet.

The payable reef disclosures were as follows:—				
	Feet.	Width.	Assay Value.	
		Inches.	Dwts.	
Main Reef	221	47	8.9	
Main Reef Leader	130	36	7.2	
South Reef	93	39	8.1	
Main Reef Leader and South Reef	20	11	23.9	

WOLHUTER.				
Total footage	...	...	...	1,618 feet.
Total footage sampled on reef	...	...	...	1,073 feet.

The payable reef disclosures were as follows:—				
	Feet.	Width.	Assay Value.	
		Inches.	Dwts.	
Main Reef	170	38.9	8.3	
Main Reef Leader	58	28.0	16.7	
South Reef	588	23.0	22.1	

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THE CLOSING DOWN OF THE CAPE COPPER MINES.

A Tragic Object Lesson for the Union Government.

A PITIFUL object-lesson in what the closing down of a mine means is provided by the Cape Copper Mine at O'Okiep. In this connection Mr. T. G. Le Mesurier writes to the Cape papers as follows:—Only a small fraction of your readers can picture the extent of the calamity due to the sudden closing down of the Cape Copper Company. Three large villages are affected—O'Okiep, which has seven stores; Nababeep, with eight stores; and Port Nolloth, which is larger than either of these. With the exception of the Fish Canning Co., the Wireless, Lighthouse, and Customs staff at Port Nolloth, every living person except the postmaster depends upon the company for his daily bread.

"On Friday, 23rd May, all day men dismissed at once, weekly men a week's notice, monthly a month, contract men three months." Daily men means coloured labour, about 1,000. Paid daily, their wage was daily spent on today's or yesterday's food. Their wage had recently been reduced to 3s. per day, and before the crisis some families were actually starving. Weekly men include a few white men and more St. Helenas, a very worthy class, holding positions of some trust at very low wages. There are very few contract men. Some officials and all the remaining staff of white men will be paid one month's wages on June 1, and dismissed to take care of themselves. Since retrenchment, following the fall of the O'Okiep Mine about nine years ago, all wages have been on a low scale. The provision of good houses, no rates and some privileges made life possible, and even comfortable. But, for men with families to maintain, there was little margin for saving. Those who desired advanced education for their children had to economise closely to pay boarding and school fees in Cape Town. During the rise in prices due to the war there was no war bonus to help employees of the company. Now all these families are to sell up and depart. Sell up! To whom can they sell? Depart! Whither? Obviously to Cape Town. We are their neighbours, though so far away. Klaver, the railhead, is distant 180 miles of difficult road. The only other exit is by ship from Port Nolloth to Cape Town. The transport of a family without much baggage would swallow all of a month's wages. And what prospect is there for many families arriving in Cape Town almost penniless at this juncture? It is difficult to understand what possible excuse can exculpate the directors of a company, with such tremendous responsibilities, from what looks to be a criminal betrayal of a people who have served them well. To discuss that would be beside the mark, in our ignorance of the facts. But it is quite clear that whatever is done by the Union Government or Provincial authorities will have to be on a large scale. My purpose in writing is to help to inform public opinion that it may stimulate and support public action to relieve the distress. And, further, to remind your readers in the Cape Province that these Namaqualanders are our neighbours. If they had come to us, as was quite possible in 1914, as refugees from a war-stricken area, we should have opened our doors to receive and entertain them. When we know what measures are being taken to meet this crisis there will doubtless be many

opportunities for us to show real hospitality to our neighbours in distress.

A correspondent sends us the following extracts from a letter just received from O'Okiep:—The enclosed notice will show that the directors sitting in London do not realise the position. Take the case of the English contract men. They will have to get three months' notice according to agreement, but how the devil are they going to get Home? Fancy giving a couple of hundred boys a day's notice; they will be starving within a week, and will, of course, steal. I have it on good authority that counting their wives and families, it will affect 5,000. I believe there is not another boat here from Cape Town for a month, and there will practically be three hundred white people wanting to leave by the first boat. I suppose I had better make for Cape Town at the end of June, but how I am going to get there goodness knows. I felt sure when I first heard the news that they would leave a few people here, but they are going to let everything go to rack and ruin, and not leave a soul in the place. Am awfully sorry for all the old people who have not a hope of getting a living. As one of the officials said to me, it is tragic. I suppose the Government will step in, but they will have to do it quickly.

The "Cape Times" correspondent at O'Okiep, in a message on May 28 stated:—It is reported on good authority that O'Okiep Mine has 200,000 tons of visible copper ore above 12 per cent., and the action of the directors in closing the mine is not understood. The Namaqua Copper Co., eight miles east of O'Okiep, has discovered a splendid lode to the north-east of the original mine. Great preparations are in hand for new machinery, etc.

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G. E. SANDERS Town Clerk.

THE GLOBE AND PHOENIX: RHODESIA'S "SHOW" MINE.

DESPITE the growing importance of the Shamva, the Globe and Phoenix remains the premier gold producer in Rhodesia. The report of the Company for the year ended 31st December last states that practically the whole of the development work done at the mine during the year was of a prospecting character, conducted under the advice of Mr. D. P. McDonald, and, as anticipated, has been unproductive of milling ore. Operations were seriously handicapped for the last three months of the year owing to the outbreak of a virulent epidemic of influenza, which not only prevented development work, but seriously disorganised the working of the mill, as shown in the reduction of output and profits. From the last advices received from the general manager the position is practically normal again. Mr. D. P. McDonald, whose services have heretofore been retained by the company, towards the end of last year entered the service of this company, and the directors have now the advantage of his continual presence at the mine. Owing to the difficulties of travelling, Mr. McDonald was only able to leave England for the mine early this year, and so far a report which he had been requested to make to the directors has not come to hand, but it is hoped to be received in time for the meeting. Work of a limited amount has been done on the copper location, and the dyke to which reference was made at the last annual meeting has been cut through and the lode again picked up. Work was suspended pending Mr. McDonald's arrival at the mine. The Phoenix Mining and Finance, Ltd., has been formed with a nominal capital of £250,000. Many properties have been submitted, some of which the Board is advised are worth investigation. The estimate of the general manager

of the ore reserves as at 31st December last is 159,913 tons containing 235,308 ozs., value per ton 29.4 dwts, of a total value of £988,293. In addition, there are the accumulated sands and slimes. Recent milling results have indicated that the estimate of ore reserves is substantially exceeded in crushing. The labour position for the greater part of the year was favourable, but was completely disorganised by the outbreak of influenza. Not only did this cause severe mortality at the mine to both the black labour and European staff, but very severely handicapped labour recruiting. The net profit for the year, after bringing in £10,677, amounted to £121,742. Two interim dividends have been paid, namely:—No. 53 of 1s. per share, free of income-tax, on 15th August last, and No. 54 of 1s. per share, free of income-tax, on 14th November last, leaving £41,712. The directors recommend a final distribution of 1s. per share, free of income-tax, absorbing £40,000, and to carry forward £4,712. The directors regret the falling off in the profit, which was largely due to the disorganization caused by the influenza, the output of gold for the last three months being approximately 14,000 ozs., or £60,000 less than normal. Gold production—The output for the year was £343,171, bringing the total production of the mine to 31st December last to £5,667,684. The appeal by the Amalgamated Properties of Rhodesia (1913), Ltd., against the decisions of Mr. Justice Eve and the Court of Appeal came before the House of Lords in February this year. The appeal was unanimously dismissed with costs, thus confirming the judgments given in the two Lower Courts. The directors are pleased, therefore, that at last this litigation has terminated.

THE PROPOSED DIAMOND CUTTING INDUSTRY.

Details of the Bill Introduced by the Government.

THE much-discussed Bill to provide for the establishment of a diamond cutting industry in South Africa came before the House of Assembly this week, on a motion by the Minister of Mines for the second reading of the Bill. The Minister of Mines referred to previous attempts to take legislative action, reminding the House that in 1913 the Senate appointed a Select Committee to report on the possibility of establishing a diamond cutting industry in South Africa, that Committee producing a majority and two minority reports. Nothing, however, had been done since then. He dealt with the three main difficulties which had been insurmountable in the past in establishing such an industry, the first being the cost of labour, the second the difficulty of getting properly trained skilled diamond cutters, and the third the difficulty of getting a regular supply of rough and uncut diamonds in the Union. Mr. Malan believes that all these difficulties have been removed as a result of the war, that South Africa is in a favourable position from a labour point of view as the result of the war, that the experience of Brighton and other places has proved the

possibility of procuring cutters, and that inasmuch as the Union produces 96 per cent. of the world's diamond output, the third difficulty is one easily disposed of. Mr. Malan made it clear that the draft contract recently tabled in the House was not a contract entered into by the Government with another party, but was merely a proposal put forward by an interested party as the possible basis of a contract which would be only ratified by Parliament. Mr. Malan outlined the provisions of the Bill, and particularly the method by which the cutters were to secure the necessary supply of rough and uncut stones to maintain the industry. He was at some pains to explain the price at which the forced sale of diamonds by the buyers to the cutters was fixed, and the pressure which Government could apply to diamond buyers to secure a supply for cutting, the said pressure consisting of the prohibition of export. He pointed to the considerable urgency in the matter of establishing what he believed to be *bona fide* industry, and expressed the hope that the debate for that reason would be confined to well defined limits. Present appearances point to a lengthy debate.

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THE INDUSTRIAL PROSPECTS OF SALDANHA BAY.

"Salphos" Fertilizer and Shipping Facilities—Water and Railway Questions.

THREE years ago Saldanha Bay was only a name on the map of South Africa, except amongst those historical students who have read the expressions of thankfulness of storm-tried navigators for such a haven on a barren coast. At Saldanha they found safety and rest, could refit and refresh themselves for further explorations. Selfishness and rivalry, however, kept the bay fairly clear of visiting ships in later years, so much so that definite instructions were given by the Dutch East India Company that their captains and officers should ever speak of the existence there of dangerous currents and treacherous natives. The effect was pronounced upon shipping, in fact, the harbour was so ignored as a refuge that Admiral Elphinstone, who captured 18 Dutch ships there in 1791, records that he was following the fleet when in a fog it mysteriously disappeared. By good luck a fisherman was captured off the land, and, under threat of the lash, he undertook to show Elphinstone where the fleet was anchored. Elphinstone was enthusiastic in his description of the harbour, which apparently he was ignorant of. Since that time Saldanha has been visited largely, and throughout the 19th century reference as to its possibilities constantly cropped up. Fitful efforts from time to time were made to utilise this remarkable harbour, but all seemed premature, until very recently, when the bay's potentialities compelled attention with the many other remarkable prospects of the Sub-Continent. The days of obscurity and remoteness seem to have passed. However, despite the drawbacks of isolation and lack of transport, the farmers of Saldanha and district have waxed wealthy and built up in the last 100 years or so an aristocracy second to none in South Africa. What they lacked in travelling facilities they made up in princely entertainment, and to-day there are few prominent men who cannot recall a visit to the Melcks, the Kotzes, Van Bredas and others of the south-west coast belt. Life to these giants meant sport, and what sport it was, from the wild pig hunts to snook and trek-net fishing! With great natural tanning resources they were only indolently progressive, and beyond leaving a splendid stock of descendants, who preserve the ancestral qualities of integrity and courage, they only pointed the way. On a newer generation, some of it from the Rand, rested the necessity of impressing on the South African public the missed opportunities and prospects of the Western Cape Province. While earlier everyone's eyes looked north-east to the riches of Kimberley and Johannesburg, now are those selfsame eyes reversed to the land they passed by to see industrial and other ventures springing to vigorous life around Saldanha Bay. At Saldanha the deposits of petrified guano from the raw material of the concern known as Salphos, Ltd., which is opening its career as producers of phosphate fertiliser under the control of the Corner House. Development of quarries carrying the deposits has gone on apace in the last few months, and some thousands of tons of rock have been trucked to the Ferreira Deep, Johannesburg, for treatment in a plant just completed there. That this venture is going to supply an article of immense worth to the farming community of South Africa cannot be questioned, and one can only regret that it did not come into existence some years ago. Owing to insolubility of the phosphoric acid in the raw rock, and the usual attitude of non possumus (because such rock had never before been successfully treated) valuable time passed, until the chemists of the Rand again demonstrated their ability to solve difficult problems. The farmers need the fertilisers badly, and eagerly await supplies in quantity and fair in price. Valuable time has been lost, but Saldanha, with its guano deposits, must prove a friend in need to the farming community of the Union. But Saldanha Bay is going to prove a better friend still of that community when millions of tons of foodstuffs are produced and need for a harbour to ship those tons overseas arises. Saldanha Bay is a ready-made harbour without bar or barrier to entrance at any time or in any weather. The biggest ships can enter and shelter there, the docks would be the cheapest in South Africa, if not in the world, and materials of all kinds could be handled cheaply and conveniently. The world cries out for foodstuffs; South Africa says, produce, produce; our engineers say, prepare now for the output; the farmer asks for fertilisers first and cheap transport next, and Saldanha

answers in no uncertain voice with the first and the last—fertiliser and shipping facility. Mention has been made of industries at the bay. Two coming factories are there established and produced in 1918, 20,000 cases of lobster (value £120,000), and this the product of five months' fishing. Many people are employed by these factories, and coloured fishermen earn as much as £10 a week. Why this business is not followed by Europeans is difficult to understand, and returned soldiers in "blind alley" occupations would be well advised to look into the chances of fishing at Saldanha as a means not only to livelihood but to competence. Hundreds of whales are taken yearly by the two concerns established. In fact thirteen are often seen at the slips at one time, and a fair idea of the production of these stations is only had at the beginning of the season when the oil barrels are collected and stacked in their thousands for filling with oil. Seals, too, are numerous on this coast, and offer profit in fur and oil to the venturesome and capable. Farming at Saldanha has features that are not to be despised. No stock diseases, good grazing, cheap grain production, a perfect climate, and a respectable rainfall make a good and fair catalogue. Cattle, horses, sheep, pigs and poultry all thrive. Saldanha Township itself is being made into a seaside resort, and possesses quite unique conditions as a playground for the South African nation. It possesses climate, bathing, boating, fishing, shooting, golf, riding and sightseeing. Facility for amusement can be had for the asking in great variety, and it wants little imagination to recognise the latent possibilities of Saldanha. Visited in the last three years by most people whose business it is to see and know things, Saldanha, with its forty-five square miles of sheltered harbour, with its wonderful lagoon as large again, and last, if at present least, its thriving and industrious inhabitants, is granted a future to be envied. It is the door to a rich and extensive hinterland, the possibilities of which are only now being recognised. As already said, little imagination is necessary to grasp the latent potentialities of the zone. Handicaps to progress are an indifferent railway service and a proper water supply. The former now engages the earnest consideration of those responsible, they having long recognised the utility of the narrow gauge railroad in dealing with the tonnage developed by the farmers alone. The water problem is capable of solution, for the Berg River is but 18 miles off, and other sources of supply are even nearer. Public opinion at Saldanha favours a comprehensive scheme, the inhabitants being fully alive to the fact that their destiny is not that of a dorp, but of a city, and they would sooner wait for a bigger scheme now than accept South Africa's curse—the "makeshift." As a Naval base, an aviation base, as a school for our seamen, or as a military base Saldanha Bay possesses the ideal in a land sadly deficient, and the authorities will look far indeed for anything better equipped by nature. The fact is not generally known that the native inhabitants of Saldanha Bay, who were known as the "Saldaniers," were a people of gigantic physique, and were by nature a lordly race. The warriors dressed in sealskins, and travellers tell of their grand manner. Van Riebeeck, however, while admiring their qualities, disliked their arrogance, and had them destroyed root and branch on the site of the Saldanha Township, the farm being known to this day as "Oorlogs Vlei." Three thousand warriors and all their belongings drenched the sands of Saldanha with their blood in one short day. Van Riebeeck was thorough! The story points the moral that what helped the savage to rise much above the level of his day is just as likely to act on our own in the same way. To grow the best crop one must sow in good soil, and Saldanha is soil of inspiration as well as soil of convenience to all sea, land and air education and development. The whole trend of evidence is to-day towards the harnessing to usefulness the asset of Saldanha Bay, and if not to-day, then to-morrow, for one cannot fail to recognise the growth in production, and the cry for more production in South Africa, and that spells one thing. Saldanha is served by sea, by rail and by road, the latter 109 miles from Capetown, and of more than average quality. Hotel accommodation is limited, but several erections are projected to cope with increasing demand. Building, too, is going on, and promises to increase when materials are less costly.

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THE WEEK IN THE SHAREMARKET.

Dull—Unsatisfactory—Featureless.

FRIDAY morning brought a veritable holiday market. At the opening one side of Modder Easts at 20s. 6d. went through, and at the call just ten stocks were dealt in. Prices were unchanged, with the exception of Zaaipplaats, which were considerably lower. The Stock Exchange was closed on Saturday. Gossip took the place of business at the opening on Monday, and not a single transaction was recorded. The call was dull and prices were more or less easier. Modder East ex rights were sold at 20s. 3d.; Bs. and Deeps were both lower. The only sale at the opening on Tuesday was one of Breweries at 34s. 6d. The call was dull, with few and small transactions outside of a parcel of Union Fives. All the Modder stocks were easier. Van Ryn Deeps, Government Areas, Leeuwpoots and African Farms alone held their own, the latter having improved overnight. A blank opening on Wednesday and a weak call, with rather more transactions. City Deeps and Modder Bs. held their own. African Farms and Leeuwpoots were the turn harder. Alkalis made a slight recovery. Otherwise all the important stocks were marked down. The market showed no improvement on Thursday: the few advances were balanced by the same number of falls. Thus Springs, Roberts Victors and Modder Deeps went better, while Government Areas, Van Ryn Deeps and Modder Easts were lower. The outside business during the week reflected the tone of the general market. The sales were: Sakalavas, 8s. 3d. and 8s.; Compound Diamonds, 4s. to 4s. 5d.; Phoenix, 1s. 1d.; Makganyene Diamonds, 42s. 6d. and 40s. for odd lots; Koodoos, 22s.; Vendors, 18s.; South-Westerns, 35s., the last price being 30s. buyers and 30s. sellers, ex pool. Mauss Syndicates were quoted at 22s. 6d.—25s.

At the opening on Friday Modder East advanced to 19s. 9d. The tone on call was decidedly more cheerful, and prices improved, as the following alterations in the quotations will show:—Sales: Gelduld Proprietary, 46s. 6d.; options, 12s.; Government Areas, 94s.; Modder East, 19s. 9d.; Pretoria Cements, 68s.; Randfontein 14s. 9d.; Springs, 48s. 9d. and 49s.; and buyers: Van Ryn Deep, 70s.; West Springs, 23s. 6d.; Wit. Deep, 13s. 6d.; Zaaipplaats, 9s. 5d. Buyers and Sellers: Brakpan, 64s., 68s.; Coronation Freehold, 1s. 11d., 2s.; Knight Central, 6s. 7d. (buyers); Rand Mines, 65s. (sellers); Randfontein, 15s. (buyers); Roberts Victor, 11s., 13s.; Ryan Nigel, 3s. 5d. (buyer); Sub Nigel (10s. paid), 9s., 9s. 3d.; Alkali, 12s. 9d., 13s.; Western Rand Estates, 2s., 3d. An odd parcel of South-Westerns was sold at 32s. 6d.

	Fri., 30th.	Mon., 2nd.	Tues., 3rd.	Wed., 4th.	Thurs., 5th.
Glencarus	—	1	1 1/2	1 1/2	—
Glencoe Collieries	6 6+	—	—	—	—
Glynn's Lydenburgs	—	—	18 0	16 0	—
Government Areas	95 5	95 3	95 3	94 9	94 3
Hume Pipes	—	27 6+	—	—	—
Johannesburg Board of Executors	3 0*	3 0*	3 0*	3 0*	3 0*
Jupiters	3 3*	3	4 0+	3 3	3 3*
Klerksdorp Proprietary	1 1	1 1	1 1	1 1*	1 1
Knight Central	6 9*	6 10	6 10	6 4	6 4
Knights Deeps	5 0*	5	—	—	—
Lace Proprietary	18 0*	19 0+	19 0+	18 6+	18 0*
Leeuwpoot Tins	22 0*	22 1	22 3*	23 0*	23 3
Lydenburg Farms	8 7	8 7	8 8	8 8	8 9+
Middlevel Estate	1 0*	1 1+	1 0	1 0*	1 0
Modder B.	163 0	160 0	159 0	160 0	160 0
Modder Deeps	153 0*	152 0*	—	150 0*	150 0*
Modder Easts	20 6*	20 3	20 0	19 4*	19 3
Do. Options (3 years)	3 3*	3 5+	3 2	3 0*	3 0
Do. Options (4 years)	5 6	5 6+	5 1	4 6*	4 6*
National Banks	£15 1/4	£15 1/4	£15 1/4	£15 1/4	—
New Boksburgs	1 4*	1 5*	1 5	1 5*	1 5*
New Eland Diamonds	28 6+	28 6+	28 6+	—	—
New Era Consolidated	9 7*	9 6*	9 10*	9 9*	9 9*
New Geduld Deeps	4 9*	4 9*	4 9*	4 11	5 0*
New Kleinfonteins	9 4*	9 3*	9 6*	10 0+	9 3
New Modders	£27*	£27 1/2*	£27 1/4*	£26 3/4*	£26 3/4*
New Unifeds	4 0+	4 0+	4 0+	4 0+	4 0+
Nourse Mines	—	12 0*	12 0	—	11 3*
Pretoria Cements	—	68 0*	69 0+	67 6*	68 0*
Princess Estate	1 6*	1 6*	1 6*	1 10	2 0
Rand Collieries	3 3*	3 3*	3 3*	3 3	3 3*
Rand Nucleus	1 3*	1 4*	1 3*	1 3*	1 4*
Rand Selections	—	—	75 0*	79 0+	—
Randfontein Deeps	4 9+	4 6*	4 9+	—	4 9+
Randfontein Estates	14 0*	14 0*	14 3*	14 6	14 6
Roberts Victors	—	19 0+	12 6+	11 0*	12 6
Rooiberg Minerals	4 1*	4 1	4 0*	4 2*	4 1*
Roodpoort United	2 0*	1 9*	2 1*	—	—
Ryan Nigels	3 3*	3 3*	3 3*	3 3*	3 3*
Shebas	1 6*	1 9*	1 6*	1 6*	1 6*
Summer Deeps	1 3*	1 6+	1 4*	1 3*	—
S.A. Breweries	34 0*	34 6*	35 0+	35 0+	35 0+
S.A. Lands	5 10*	5 10*	5 10*	5 9	5 9*
Springs Mines	47 3*	47 6	47 0*	45 6*	47 3
Sub Nigels	19 3	19 0	19 3+	18 9	18 6
Swaziland Tins	—	20 0+	20 0+	—	—
Southern Van Ryns	8 10*	8 10*	—	8 9*	8 9*
Sub Nigels, 10s. paid	9 0*	9 0*	9 0*	8 6*	8 6*
S.A. Alkalis	11 0*	11 0*	11 6*	13 0	—
Transvaal Lands	—	27 6*	27 6*	29 6+	30 0+
Transvaal G.M. Estates	13 3	13 3*	13 3*	13 3*	13 3*
Van Ryn Deeps	70 0*	70 3*	70 6	70 0*	69 0*
Village Deeps	—	13 9+	12 0	12 0*	13 6+
Western Rand Estates	—	1 7*	1 7*	—	1 9
Witwatersrand	15 6*	15 6*	16 0*	16 0*	16 0*
Witwatersrand Deeps	—	12 9*	12 9*	13 0	13 0*
Woluhuts	2 1 1/2	2 3*	2 3*	2 3*	2 6+
Zaaipplaats Tins	9 3	9 0*	9 1*	9 0	9 2*
Union 5 per cents.	£102 3/4	£102 3/4	£103	£103 1/4	£103
New State Area	23 9*	24 0*	24 3*	24 1*	24 0*
Transvaal & Delagoa Investment	25 0*	—	—	70 0*	70 0*
Tweefontein Collieries	23 0*	23 6*	23 0*	23 0*	—
Union Corporation	15 0*	—	15 6*	15 6*	15 6*
Van Dyks	3 0+	3 0+	—	3 0+	—
West Springs	22 3*	22 6	22 3*	22 3	22 3

*Buyers. +Sellers. AEx London. BOdd lots.

	Fri., 30th.	Mon., 2nd.	Tues., 3rd.	Wed., 4th.	Thurs., 5th.
African Farms	13 7*	13 6*	13 10*	14 0*	14 3*
Anglo-Americans	—	23 6*	23 6*	—	—
Apex Mines	7 0*	7 0*	7 2*	7 2*	7 0*
Bantjes Consolidated	2 3*	2 3*	2 5*	2 3*	2 3
Brakpan Mines	67 6*	67 0*	67 3	68 0+	68 0+
Bushveld Tins	—	1 0	1 0*	1 0*	1 3
Cinderella Consolidated	4 0*	4 0*	4 0*	4 0*	—
City and Suburbans	6 9*	6 3*	—	6 6*	6 9*
City Deeps	55 0	54 6*	55 0	55 6*	—
Clydesdale Collieries	24 0*	24 0*	24 0*	24 0*	24 0*
Consolidated Investment	25 0*	—	—	27 0*	27 0*
Consolidated Langlaagte	17 6*	17 6*	17 6*	17 6*	17 6*
Consolidated Main Reefs	10 0+	9 10+	9 9	9 6	9 6*
Consolidated Mines Selection	22 0+	—	—	—	22 0
Coronation Collieries	57 6*	57 6*	57 6	57 6*	—
Coronation Freeholds	2 0*	2 0	1 11	1 7*	1 7*
Coronation Syndicates	1 6*	1 6	—	1 9*	1 9*
Crown Diamonds	21 9*	21 6	21 6	21 3*	21 3
Daggafontein Mines	22 3	22 3	22 3	22 3	22 3
East Rand Coals	2 7	2 7	2 0	2 6	2 0
East Rand Deeps	—	0 10*	—	0 10*	—
East Rand Mining Estates	10 0*	13 0+	17	17	18 0+
East Rand Proprietary	5 0*	5 9	—	5 3	5 3
East Rand Debitures	£52	—	—	—	£52*
Eastern Gold Mines	—	—	—	—	1 5+
Frank Smith Diamonds	4 5*	4 8	4 7	4 5*	4 5
Geduld Proprietary	47 6	47 6	47 0*	45 0+	45 6*
Do. Options, 1921	13 9+	12 0*	12 3*	—	11 6*
Ginsbergs	—	1 6	—	1 6	1 0*

*Buyers. +Sellers. AEx London. BOdd lots.



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ENGINEERING SECTION.

HAMMER DRILLS—THEIR HISTORY, DESIGN AND OPERATION.—III

[By HENRY S. POTTER.]*

Slide 24 illustrates in detail the Leyner machine as used on the Witwatersrand. Personally, I think the man who has done most of the pioneer work in bringing the hammer drill to its present stage of perfection is Leyner. His patents, covering most of the salient points of this machine, date back to 1899, but a considerable number of elements of the modern drill are covered by detail patents of late date.

ing and allaying dust. The machine, as is well known, is made entirely from drop forgings, hardened and ground, the whole being mounted on a screw feed cradle. (An illustration of this machine is included in the text. See Figure "J.")

Slide 25 illustrates the Hohman Cradle Hammer Drill. In many respects this is similar to the Leyner except that

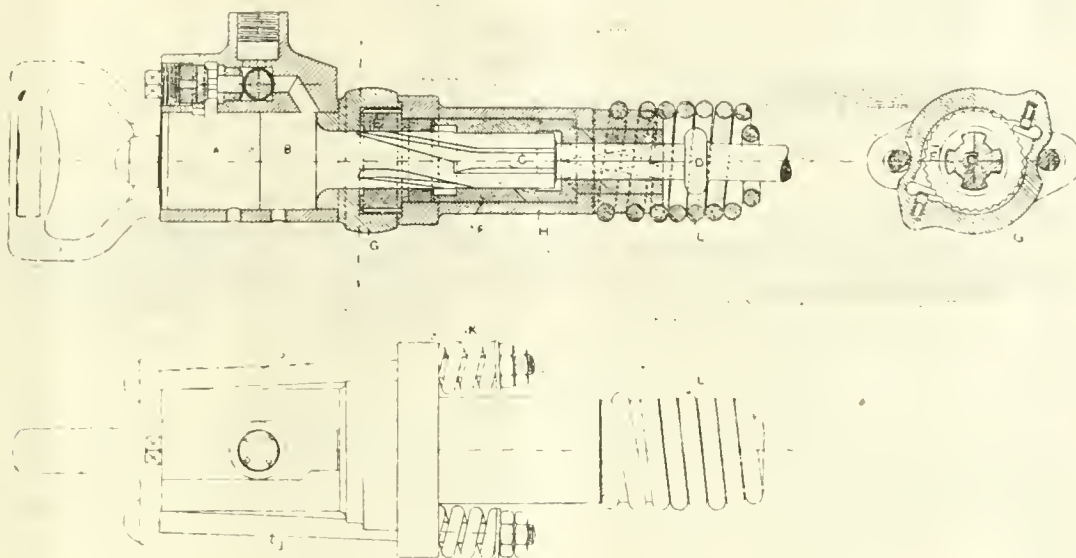


FIG. E.—FLOTTMAN JACKHAMMER.

Characteristics: All steel construction; ball valve; valve chest solid with cylinder; automatic rotation arranged on front end of piston; chuck fitted for square shank hollow steel; a single exhaust port at front end of cylinder to be closed by thumb of operator to increase blowing through steel.

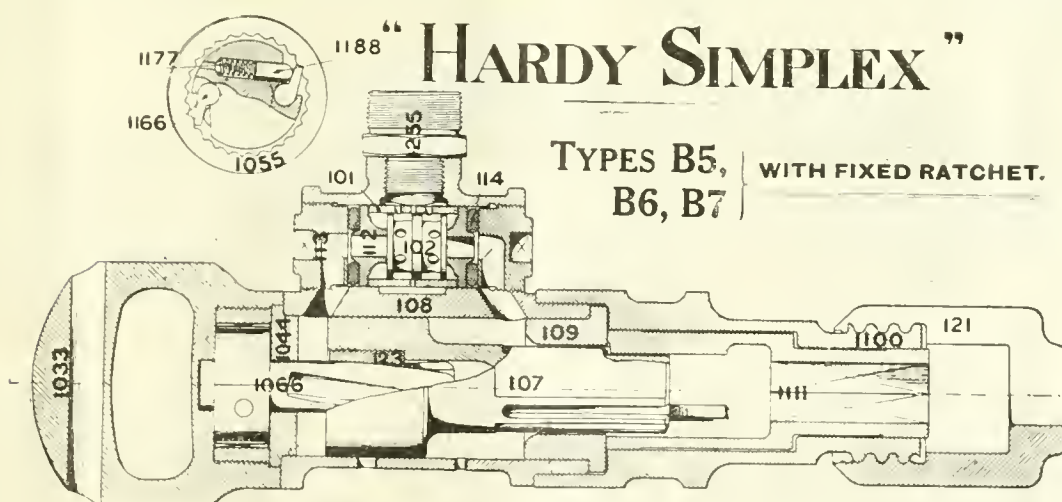


FIG. "F."

Characteristics: Differential piston with rifle bar at back of cylinder similar to Ingersoll Jackhammer; valve chest solid with cylinder; shell valve positive seated; all-steel construction; chuck formed for square shank steel.

This slide illustrates very clearly the details of construction of the machine and its water device. The particular feature of the Leyner machine is the provision of a tube arranged on the axis of the machine leading from the back head to carry water direct into the shank of the steel to assist drill-

ing and allaying dust. The machine, as is well known, is made entirely from drop forgings, hardened and ground, the whole being mounted on a screw feed cradle. (A block of this machine is included in the Figure "K.")

Slide 26 illustrates Meyer's water device which consists of the provision of two concentric tubes coming through from the back head—the internal one supplying water, and

the external carrying live air down into the shank of the steel. This, while adding certain complications to the machine, ensures against the water getting back into the machine owing to high pressure air being used in the hole of the steel. I might add that both in the Leyner and Holman, the air is taken down with the water, but this would be expanded air as it has to leak down the flutes of the piston from the front portion of the cylinder.

Slide 27 illustrates Bayliss Water Device such as was used on the B.C. 22 and consists of a water tube similar to that used on the Leyner, but with a small control valve to govern the admittance of air which is mixed with the water and passes down the tube into the hollow steel.

Slide 28 illustrates Stephen's Water Head as used on the Hydromax M/c. In this device the water is brought into an annular chamber surrounding the anvil block; the joint being made by means of "U" leathers. (See Figure "I" in text.)

same in a separator. This slide clearly shows the device, which consists of a collector arranged over the collar of the hole. A short length of flexible pipe is connected up to the separator cylinder, a vacuum being produced therein by means of a compressed air ejector. This device can be used under certain conditions, but has the disadvantage of masking the collar of the hole, and also being in the way in incline stopes.

Slide 32 illustrates a Hammer Drill fitted up to work under somewhat novel conditions, namely, it is built specially for use in submarine drilling. The particular feature of the machine in question is that instead of the control cock being on the air side of the machine, it is arranged on the exhaust side. By this provision the machine is always filled with air, thus assisting to keep the internal parts free from water. The diver holds this machine in his hand, the exhaust being taken by means of a flexible pipe to a float on the surface.

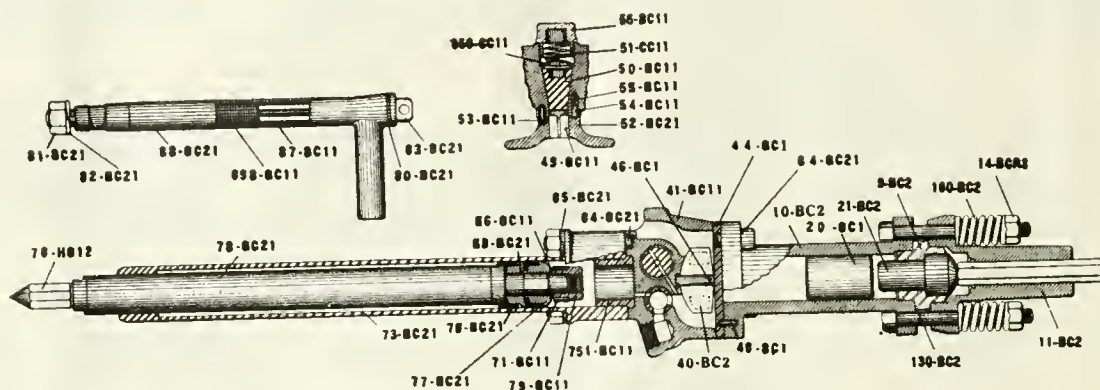


FIG. G.—B.C.21 INGERSOLL—AIR FEED—HAND ROTATION.

Characteristics: Butterfly valve at back of cylinder. Rear type of air-feed can also be fitted with reverse type; front head two-part construction with separate anvil block support; automatic oiler in rotation handle.

A similar machine, known as B.C.22, but fitted with axial water tube, fitted with air mixing device.

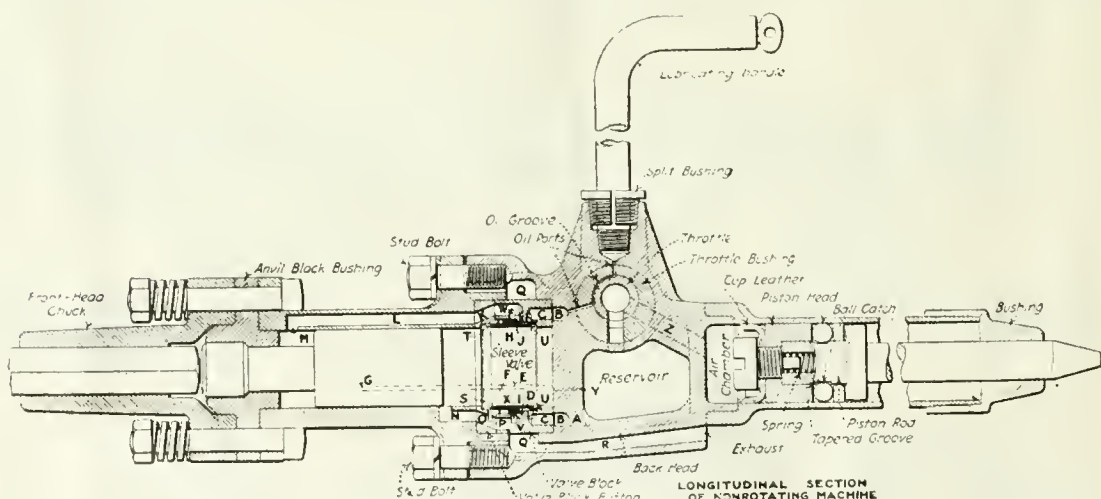


FIG. 11.—CLEVELAND HAND ROTATION AIR FEED HAMMER DRILL.

Characteristics: Cylindrical shell valve; short plug piston adapted to pass through valve; air reservoir in back head to stabilise air pressure. Front head design similar to B.C.21 Ingersoll (Bayles).

Slide 29 of Carthews in which the provision is made by means of a Cam Device, which compresses the leathers so as to make a better and more water-tight joint on the steel.

Slide 30 shows Taylor's water device which is similar in some respects to that used by Stephens, except that an absolute water-tight joint is made at the front end of the anvil block by providing a taper shank on the steel similar to that used in the Climax Imperial Machine of 1909. It will be noticed that the last few slides dealt particularly with water devices.

Slide 31 illustrates the Sanitas Suction Dust Device, which consists of sucking the dust from the hole and settling

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RHODESIAN & BELGIAN CONGO SECTION.

THE report of the Executive Committee of the Rhodesia Chamber of Mines and statement of output of gold and other metals and minerals for the month of April, 1919, contains, *inter alia*, the following:—The following is a summary of the returns of native labourers employed on Southern Rhodesian mines during the months of February and March, 1919:

	February.	March.
Local	8,510	9,730
Portuguese Territory	5,819	5,710
Northern Rhodesia	5,395	5,274
Nyasaland	7,261	7,296
Other sources	829	781
	27,814	28,791

The number employed in March shows a decrease of 3,757 as compared with the corresponding month in 1918. A scheme to enable returned soldiers to prospect for gold and other minerals in Southern Rhodesia has practically been arranged, and as soon as the necessary details have been settled, applications will be received at certain centres in the country which will be published in the press in due course. Members are reminded that the next meeting of the Railway Conference will take place at Salisbury on the 21st July next, and notice of any subject to be placed on the agenda for the meeting must reach the Secretary not later than the 6th June next. It is satisfactory to be able to announce that the local banks have informed the Chamber that on and after the 1st of June next, they will be prepared to purchase native gold at £3 16s. 9d. per standard ounce. In reply to a request from the Chamber, that, having regard to the current value of silver on the London market, the present price of 2s. 6d. per fine ounce should be increased, the local banks state that, owing to the fluctuations in the value of silver, they are unable to improve upon the present price. The total value of the gold and other mineral yield from Southern Rhodesia during the month of April was £291,380, as compared with £283,648 for the previous month of March.

SUMMARY OF PRODUCTION, APRIL, 1919.

	Ozs.	Value.
Gold	50,893·72	£213,160
Silver	15,158·60	1,690
Base minerals and precious stones		76,530
		£291,380

GRAND TOTALS GOLD AND OTHER METALS AND MINERALS AND PRECIOUS STONES—OUTPUT TO DATE.

	Ozs.	Value.
Gold	10,776,760	£43,600,063
Silver	2,698,219	309,488
Base minerals and precious stones		5,410,263

Grand total value of mineral production to date £49,319,814

ASBESTOS—APRIL, 1919.

Bulawayo District.

	Tons.	Value.
Birthday A & B, Willoughby's Consolidated Co., Ltd.	51·78	£828 9 7
Birthday—Adjustments of value		5,261 9 3
Nil Desperandum (S.A. Asbestos Co., Ltd.)	67·35	1,347 0 0
Shabanie (Rhod. & General Asbestos Corporation, Ltd.)	217·54	3,960 13 7

Victoria District.

Balmain (S.A. Asbestos Co., Ltd.)	16·13	258 0 0
Gath's (Rhod. & General Asbestos Corporation, Ltd.)	86·76	1,388 3 2
King Asbestos (Rhod.), Ltd.	190·00	3,836 10 0
	659·56	£16,883 5 7

SUMMARY OF PRODUCTION, APRIL, 1919.

		Value.
Gold (ozs.)	50,893·72	£213,160
Silver (ozs.)	15,158·60	1,690
Coal raised (tons)	45,912·00	11,447
Coal used for coke and bricks (estimated value)		4,879
Copper—blister (tons)	290·50	11,525
Chrome iron (tons)	7,385·00	27,572
Asbestos—fibre (tons)	659·56	*16,883
Arsenic (tons)	21·77	774
Diamonds (carats)	21·25	150
		£291,380

† Sales. * Including adjustments on realisation.

The three leading producing gold mines of Southern Rhodesia during the month of April were with their contributions as under:

Gwelo District.

	Tons treated.	Recovery.
Globe and Phoenix—Mill	5,754	£25,233
Sands	10,000	6,750
Slimes	2,395	1,520
		£33,503

Salisbury District.

	Tons treated.	Recovery.
Shamva—Mill	56,595	£15,032
Sands	28,143	18,712
Slimes	28,722	372
Slags		
		£34,116

Bulawayo District.

	Tons treated.	Recovery.
Lonely—Mill	4,640	£8,253
Slimes	4,640	15,837
		£24,090

Moodie's Gold Mining and Exploration.

The accounts of the Moodie's Gold Mining and Exploration Co. for the year to September 30 last show a profit of £844, as compared with a loss of £129 during the preceding twelve months. During the year the company's operations were carried on under considerable difficulty. Owing to war conditions it was not found possible to undertake any large agricultural scheme, but a start was made with a small scheme. The work of the company's mining tenants had been much restricted owing to the high mining costs. It is hoped that when conditions become normal there will be a revival in mining activity on the company's properties, yielding additional revenue to the company.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Trend of Business—The Mines and a Taxpayers' Strike—Building and Furniture Timber—Fire Insurance—Iron, Steel, Pipes and Machinery,

THE month of June opened decidedly better than May. There may be two reasons for this: Firstly, that two public holidays occurred during the past week which checked business, and another reason is that many prices are steadier because the speculative element is getting out of its goods, and so merchants' stocks and prices are less subject to the vicissitudes of dumping or its equivalent. Take the case of shipping. Many of the Union Castle ships are leaving England with half cargoes, simply because of the practical stoppage of orders at the time of the Armistice. It is also said that the British Government is not releasing any more of the big liners until after peace is signed. By the way, there is any quantity of cargo for the boats to take back to Britain, as the demand for South African goods is excellent. Of late it has been very difficult to give sound quotations, as there has been so much material and goods arriving from America and Britain. For example, one line of building hardware is selling here at half the price at which it costs to land in Johannesburg. The explanation is that these fastenings were being hoarded for the purpose of obtaining big profits, but unfortunately for the holders, the Armistice came too quickly, and so prevented the anticipated coup. There are similar lines in all departments of trade, but, as before remarked, the speculative element, although pretty strong, is gradually retiring on its losses.

THE MINES AND A TAXPAYERS' STRIKE.

The Provincial Council is not content in upsetting the gold mining industry, but there is some talk about getting £100,000 from the diamond mines, and all this on the eve of obtaining a diamond cutting industry. Professor Bastable says that citizens can refuse to produce either the work or the property that the State has the power to tax. This power of the overtaxed citizen to strike effectively against taxation is no fanciful suggestion of what might possibly happen. It happened under the Roman empire. History in a measure may repeat itself by the mining people striking against the farmers' immunity from taxation. This fact of the taxpayers' power to strike is very relevant to modern problems of finance, as taxation that is resented beyond a certain point will be evaded or avoided. The tax-gatherer can only work to his satisfaction if he carries the sense of the taxpayer with him, and he does not to-day.

BUILDING AND FURNITURE TIMBER.

There is a betterment of a halfpenny in the price of deals since last week, as hardly any cargoes of new deals are arriving from Sweden, where an advance has been made of £4 a standard, as holders are expecting a big demand after peace is signed. The question of peace is interfering with business and financial affairs very much more than the ordinary man would expect. Business is not good, as so few forward contracts are available, chiefly in consequence of the shortage of skilled labour, as it is said that so many went away during the first and second months of the strike, and very few have returned. In the case of bricklayers, the demand is so great to finish off Government schools that 3s. 6d. per hour is readily paid for the best bricklayers, and even a fraction more. So far the builders have been very busy, but until the major portion of the old contracts is finished the tendency is to hold back, more particularly in connection with the tendering for new contracts, as the idea

is that prices may become lower, which, to say the least, is very problematical. In connection with property, this is very strong indeed for stands in the actual business centre, as, for example, £17,000 was paid for a stand upon which was a pioneer building, near the corner of Market and Eloff Streets, immediately opposite the proposed handsome new building of the Standard Bank. This is likely to become one of the busiest corners of Johannesburg, as more trams pass there than any other one spot, being a junction for Hospital Hill, Yeoville, Twist Street, Judith's Paarl, Jeppestown, Malvern, Kensington, Fairview, Troyeville, etc. The excellent prices of property and the number of people who attend the auction sales are at times marvellous, and bid well for an even greater business and new erections when peace is signed and the question of the low-grade mines is settled. The prices of hardwood furniture timber are: Burmah teak, 21s. per cube; oak, 1s. 3d. to 1s. 6d. per ft.; poplar, 1s. 5d.; and Venesta panelling, 8d. to 9d. per ft. There is quite a fair demand for these hardwoods for making furniture. The proprietor of these woods was asked what he thought of our retaining this industry. His opinion was favourable, as the people in England would not be sending any great quantities of furniture over for the next year or so, as wages are very high in England, and in pre-war days the margin between the imported and the home-made furniture was very small, but now it has disappeared altogether since the cabinetmakers in England have about doubled their wages. As regards South African woods, the shop in question did not trouble about keeping them, as they were not seasoned properly and the room in his warehouse was too valuable for keeping them any length of time.

Business in the second-hand timber and iron market has, contrary to expectation, been very quiet during the past week, and owing to the scarcity of stocks on hand and the holding back of buyers for lower prices, transactions have been reduced to a minimum. Inquiries have been numerous, but, as stated, owing to the paucity of stocks, quotations are unobtainable. In respect of new iron and timber, prices are hardening and rule at present from 1s. 3½d. to 1s. 4d. for roofing iron and 1s. 6d. to 1s. 6½d. for deals. Obviously,

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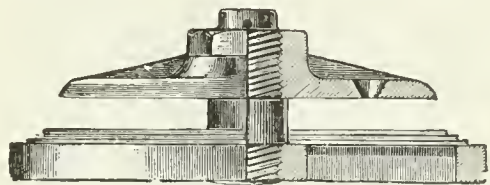
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much of this has to be kept to keep business together.

Bricks.—Business during the past week has been comparatively quiet and of a medium description. A lot of work is expected to be given out shortly, but in the meantime there is no boom on. Contractors are still short of labour, more especially plasterers, bricklayers and painters. The following prices are ruling for stock bricks: 55s. to 60s.; pressed bricks, 85s. to 100s.; wire cut, 85s. to 90s.; blue lime, 1s. 6d.; plaster lime, 5s. 6d.; white unslacked, 7s. 6d.—all delivered in Johannesburg.

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Telegraphic Add.: "ROPES."

FIRE INSURANCE.

It is just as well to remind our readers of paying attention, from year to year at least, as to conditions of their fire and other policies. A case has just come under one's notice where the policy was kept on and the premium paid without any detailed transfer from one place to another in the ordinary course of removal. The case in point was a straightforward oversight. However, as the owners of the property were above suspicion and the insurance company a first-class one a satisfactory compromise will no doubt be arrived at. In this case several horses were insured under their names, but as several had been changed, if anything had happened it might have given rise to a dispute. However, it will serve no good purpose to labour the matter, and only sufficient details are given to justify a note of warning to holders of fire policies and maybe all other documents requiring periodical attention.

IRON, STEEL, PIPES AND MACHINERY.

There is a good demand from the foundries, engineering shops and blacksmiths for Transvaal iron and steel at 35s. to 37s. 6d. per 100 lbs. The imported grades are from 40s. for the larger sizes to 47s. 6d. for the smaller, for which there is also a good demand from the mines and others. The price of broken cast iron is £7½ per ton, the party giving this information said that he had sold 100 tons and could have sold another 200 if only he had had the broken scrap. New galvanised ¾ in. piping is being sold at 7d., whereas it costs 8d. per ft. to import it into Johannesburg. There is a little demand in the Northern Transvaal for iron and the smaller sizes of spares and shop tools for the tin mines. And also a few economisers for fuel saving have been placed at about £400 each (second-hand). Imported mild steels are from 6d. to 7d. a lb.; picks, 7 lbs. each, about 70s. 100 lbs.; mining hammers, imported, 6d. a lb.; tool steel, 1s. 1d. to 1s. 6d. a lb., according to quality; wire nails, 1 in., 55s.; 2 in., 50s.; 3 in., 45s.; 4 in., 42s. 6d.; 5 in. and 6 in., 40s. Odd lines are anything from ten to twenty per cent. less for thirty days or spot cash.

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

- June 18.—Crown Mines, Ltd., 23rd ordinary general meeting, 11 a.m.
- June 19.—Rose Deep.—Twenty-third Ordinary General Meeting, at 11 a.m.
- June 19.—Durban Roodepoort Deep, Ltd., at 12 noon.
- June 20.—City Deep, Ltd., at 12 noon.
- June 20.—Robinson G.M. Co., Ltd.—Twenty-ninth Ordinary General Meeting, at 2.30 p.m.
- June 24.—Village Deep, Ltd., at 2.30 p.m.
- June 24.—Geldenhuis Deep.—Twenty-fourth Ordinary General Meeting at 11 a.m.
- July 17.—Modder Deep Levels, Ltd., Extraordinary General Meeting—Consolidated Building, 11.30.

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Company Meetings.

E.R.P.M.

Sir Evelyn Wallers, chairman of the East Rand Proprietary Mines, Ltd., in moving the adoption of the report and accounts at the annual meeting of shareholders of that company on May 30th, said:—In the annual reports and accounts of this company for the year 1918, which have been in your hands for some time, we have summarised the very full, but unfortunately very discouraging information that it has been my duty, I regret to say, to submit to you over a considerable period of time. A year ago, when addressing shareholders in annual meeting, I put before you in as great detail as possible, what we conceived to be the position of the company, and since that date we have issued at frequent intervals various statements giving any further information that became available, and thus keeping shareholders posted with the fullest possible knowledge as to the affairs of their company. You will realise, therefore, that there is little, if anything, which I can submit to you at this meeting that is not already in your possession. However, before reviewing the position again, I will, with your permission, briefly deal with the financial results obtained for 1918. You will have observed that the working profit for the year amounted to £52,916 0s. 10d., which is by far the worst results we have ever experienced, and is a decrease of £136,035, when comparing it with the working profit for 1917. You will know that this working profit is insufficient to meet the standing charges for debenture redemption, debenture interest, etc., and, therefore, the net result of the year's work, after taking these latter items into consideration, was an excess of expenditure over revenue of £54,051. A very serious position. You will see from your accounts that the balance of appropriation account at the end of last year, excluding the liability of £835,620 in respect of the unredeemed debenture debt and £96,618 balance of annuity account payable to the Union Government, stands at £198,876; but this, as you will notice, is after considering the balance to the credit of the mine development suspense account in the balance sheet as a liability. Therefore, to put the position quite plainly and to enable you to see at a glance what resources the company had per 31st December last, I place it before you as follows:—

Your cash in hand, sundry investments, sundry debtors, stores and materials amounted to £711,017.

Your actual liabilities, sundry creditors, etc., amounted to £150,293.

The balance remaining, namely, £560,724, was the financial position, and against this there is a debenture debt of £835,620 and £96,618 to the Union Government. Advantage was taken of the market to dispose of second-hand plant and machinery not required, and a sum of £55,862 received in this connection stands separately to the credit of "Sale of Capital Assets Suspense Account" at the end of last year, but is included in the figure of £560,724. I would add here that the market in regard to this second-hand machinery has now become somewhat limited, and extensive transactions appear to be unlikely. The stores and materials, which you will clearly understand I

have included in the financial position just stated, have been somewhat decreased since Armistice, and we hope to effect a further substantial reduction in this figure during the present year; in other words, to exchange in a greater degree the value of goods included in your financial position for the actual cash. As you will have noticed, no drawing of debentures for last year was necessary, as more than the requisite quota for the year had been purchased. The debenture debt, as I mentioned just now, stood at the end of the year at £835,620. I do not propose to burden you with any more details of the financial position, because the figures I have given you should leave it clearly in your mind.

Mining Operations.

Then as regards actual mining operations for the year. The tonnage mined at 1,372,300 tons was 369,000 tons less than 1917. The revenue per ton increased from 21s. 11d. to 23s. 3d., but unfortunately working costs have increased still more in proportion. In considering the working costs for last year you will remember that from the 1st January, 1918, we have debited against working costs all development charges, and in fact working costs for last year bore every charge except those that I referred to just now as standing charges, namely, debenture interest, and redemption, Miners' Phthisis Compensation Fund, Government Taxes, etc. Last year I mentioned that after August we hoped to earn a working profit of approximately £10,000 monthly, which as you know just about makes ends meet and pays our standing charges. In point of fact, we very nearly succeeded in doing this in spite of a serious accident in the Hercules shaft and the outbreak of the influenza epidemic, which together were responsible for a loss of £20,000 last September. From August last we were able to steadily improve the grade of the ore mined, and that improvement has fortunately been maintained during the first four months of 1919, during which period we have averaged approximately £10,000 profit per month. Our endeavour, and I fear under present conditions we cannot hope for anything better, is to keep going as long as possible without attacking the financial position that I put before you at the beginning of this speech and this means that we must earn, as previously mentioned a working profit of approximately £10,000 a month. We hope to continue to do this, and shall strain every effort to do so throughout this year and if things run smoothly and conditions do not become worse, we hope, and we believe, that we can similarly carry on for the greater part of 1920. This will be only possible, however, if we do not meet with any increased difficulties in the way of shortage of native workers, or labour troubles, either with white or native workmen, or by legislation which will have the effect of imposing additional burdens on the industry. When you bear in mind that our monthly expenditure is in the neighbourhood of £130,000, you will appreciate that a very slight disturbance in the smooth working of the mine may easily convert a working profit into a working loss. For that reason, therefore, it is impossible for me to tell shareholders any more definitely than I have already done how long we continue

operations, but it is disquieting to know that we have at date 326 native labourers less than at the close of the year. We have fortunately been able throughout the year to continue doing a fair amount of development work, but not as much as we could have wished had a greater supply of native labour been available. In view of the unfortunate experience for the last three years in development values practically right across the bottom of the mine, we, as you know, decided to restrict development to places where we were fairly certain of obtaining at least a reasonable percentage of payable ore. This policy has resulted in a considerable reduction in expenditure, and also in the opening up of some good grade ore, but as was to be anticipated, in small quantities unfortunately very widely scattered over the mine. The tonnage of good ore developed has been small, not nearly enough, as you will see, to maintain the ore reserve position, but at the same time it has happily enabled us in some measure to get near the position of paying our way.

Exploratory Work.

A great deal of explanatory work has been done in sections of the mine that were nominally worked out and some small discoveries of fairly good ore have been made and are continuing to be made. This exploratory work while making little or no difference to the fundamental difficulties with which the mine is faced, all assists in helping us to still carry on. The directors' and the consulting engineer's reports for 1918, in your hands, show very clearly that the three sections of the mine which in the bottom workings gave some slight amount of encouragement were very widely scattered over the whole breadth of the property, and are unfortunately limited in extent—the Driefontein section in the extreme west, the Hercules section in the centre, and a section of ground east of the Cinderella Deep, were the three areas. The good ore developed in those three sections is already being sent to the mill at a fairly rapid rate, and after all the preparations for stopping were made development was recommenced. Unfortunately since the close of last year the outlook is even less encouraging. The extension of development in the Hercules section has, I regret to say, proved disappointing. The Driefontein section is holding its own in development, and the important drives and winzes are just about maintaining their value. On the other side of the property, namely the eastern side, only one of the four drives going east of the Cinderella Deep is at the present time being driven, and this one is now giving unsatisfactory values; the other three drives were stopped in poor ground. The point that I must again emphasise in the minds of shareholders in regard to these widely separated development points is that because of the distance of unpayable ground that separates them, development is a costly business, and similarly costly is the eventual handling of the rock from all these three sections to the mill.

Then there is the fact, as I have already intimated, that these three sections of the property in which development holds out any hope at all are very restricted in area and that their extension is limited by certain definite physical factors. In fact the possibilities laterally being so small, it follows that extension

of value in depth is the only possible outlook, and in that connection certainly as regards the Hercules section, we have to proceed extremely cautiously because of the nearness of the water zone.

New Shaft Stopped.

In the directors' and consulting engineer's reports for 1918, which are in your hands, we have again summarised in great detail the reasons that convinced the board of this company that wisdom lay in discontinuing the sinking of the new shaft in the unexploited areas of the south. Having, therefore, given all that full detail, I do not propose, nor would you desire me, to cover the ground again, but I will at any rate say this: that we are more convinced than ever in the light of further experience that the policy of the abandonment of that scheme was the right one and that your board remains convinced regretfully that the conclusions to which we came are the only conclusions possible in the existing unfortunate circumstances. The Workmen's committee has again amply demonstrated its usefulness during the past year. Smooth working and proper adjustment in relationship between the management and the men is necessary in every undertaking, but in the case of this company it is even more than that: it makes all the difference between being able to continue for a while or ceasing to exist sooner than is anticipated. I trust that any tendency towards precipitate action on the part of the men in regard to any matter in which they feel aggrieved will entirely disappear, and in this connection the Workmen's Committee, being immediately able to discuss with the management any grievance, imaginary or real, is bound to be of the greatest assistance.

The total number of our employees who unfortunately lost their lives on active service is 81. A short while ago a very beautiful little memorial was erected in the grounds of the Recreation Hall and dedicated to the memory of these men who gave their lives in the service of their country. We offer to the relatives of those men our respectful sympathy. In conclusion I desire to place on record the board's appreciation of the valuable services rendered during the year under very difficult conditions by the consulting engineer, Mr. E. H. Clifford, the general manager, Mr. Meyer, and all those who worked loyally with them.

Mr Renaud seconded and the motion for the adoption of the report and accounts was adopted nem con.

KNIGHT CENTRAL.

The annual meeting of shareholders of Knight Central, Ltd., was held in the board room, Corner House, on May 30th. Mr. Frank Raleigh presided, and there were 247,000 shares represented.

Chairman's Speech.

In moving the adoption of the report and accounts the Chairman said: A working profit of £15,640 was earned for the year, which, after allowing for interest, etc., received, less donations and Phthisis Fund assessment, is increased to £16,278. The appropriation account shows that as the result of the year's operations the balance brought forward at the commencement of the year is increased by £15,061, which brings the total credit balance of this account to £118,697. The balance sheet indicates how this sum is constituted, viz.:

Stores, shares in co-operative concerns and debtors	£39,654
Net cash and investments, after allowing for all liabilities	79,043
	£118,697

The net cash and investments show an increase of £30,765 for the year. The balance sheet calls for no further comment from me, as with the exception of the figures referred to it hardly differs from that of the previous year. You will note that compared with the previous year the working profit showed an increase of £11,668, although the tonnage milled decreased by 33,650 tons. You will realise that the whole of the working profit earned during last year, £15,640, was obtained in the last eight months of the year, the first four months of that year having produced no profit. The value of the yield shows an increase of 3s. 11d. per ton as compared with the preceding year, against which working costs increased by 3s. 1d. per ton.

The development operations for the year produced an estimated payable tonnage of 162,300 tons valued at 8.1 dwts. Operations were practically confined to the area east of the east shaft, which, as you know, has opened up remarkably well since our last meeting. No shaft sinking has been done, and the large area south of the Simmer dyke has remained practically untouched as far as development work is concerned. It will thus be seen that in the matter of development the policy advised to you in the middle of 1917 has been continued throughout the past year.

Patch of Main Reef.

At our last meeting I informed you of the discovery of a patch of good main reef on the 17th and 18th levels east of the east shaft, and since then work has been vigorously prosecuted in this area. At the end of the year under review 106,000 tons of 9 dwt. ore had been exposed, and since then a further 27,800 tons have been exposed of a value of 6.3 dwts. The values obtained by the development operations of the past 4½ months ending 23rd instant are as follows:—

	Distance sampled.	Average value—dwts.	Channel width— inches.
18th Level—			
East drive	210ft.	5.6	80
West rise No. 1	60ft.	9.1	29
East winze No. 1	70ft.	4.8	44
East winze No. 2	70ft.	10.9	43
East rise No. 3...	20ft.	5.8	65

While there has thus recently been a general falling off in values in this area, we cannot yet say that its payable limits have been reached. It has, however, to be realised that this particular area is the only place in the mine where development work is being carried on at present, and that it is one upon which the future, as far as can be judged, entirely depends; further, that its position in relation to the existing shafts makes it very difficult of access—indeed, unless further shaft sinking work is undertaken it would not be practicable to mine any considerable quantity of rock from below the horizon of the 18th level. The consulting engineer is not able as yet to recommend the board to embark upon the expenditure necessary to carry on further shaft sinking to exploit this area, and the board does not wish to inaugurate such a policy unless the development operations now being carried on indicate that there is every chance of its being successful. Should it be decided to recommence shaft sinking, it is probable that it will either be done by sinking the present east subsidiary shaft to the 19th level and again cross-cutting through the Simmer dyke, or, if the area promises to be really extensive, by sinking an auxiliary shaft in the area itself.

The patch of main reef to which I have been referring has been opened up since the latter part of 1917. Over 4,000 feet of driving, rising, winzing and cross-cutting has been done in this area, developing a tonnage of approximately 134,000 tons of high grade ore. The result thus achieved in so short a time is, I think you will agree, evidence of very satisfactory work at the mine, and our manager and his staff are to be congratulated on the energetic way in which the development work referred to has been accomplished.

I will not repeat to you the disappointing results obtained by the Company in the past few years in the large area south of the Simmer Dyke; they are fully recorded in the previous reports, and were very fully summarised by me at the last annual meeting.

The position of the ore reserves was somewhat improved during the year, as whilst there was a small reduction in their quality the average value showed an increase of 1 dwt.

Operations to Continue.

A review of the past year's work would not be complete without a reference to the special report which the Directors issued to shareholders in October last. That report was the outcome of a resolution passed at our last meeting which asked the Board to take into consideration the immediate liquidation of the Company. The matter was very fully investigated by our Consulting Engineer, who submitted a valuation of the Company's assets, assuming immediate liquidation, on the one hand, and a continuation of operations as long as possible on the other. After full consideration, your Board decided that it was in the best interest of shareholders to continue operations as long as profits could be earned, and not to recommend the immediate liquidation of the Company. Although, owing to a series of unforeseen difficulties to which I will presently refer, it has not been possible to earn the profits forecasted at the time this decision was taken, yet the improvement in the position of the mine, both financially and in value of ore reserve, has demonstrated the wisdom of the decision, and I have no doubt that shareholders approve of the Board's recommendation in the matter.

The results for the last quarter of the past year were adversely affected by the influenza epidemic, from which the mine suffered very severely, the native labour underground strength falling from 1,940 at the beginning of September to 1,090 at the first part of January this year. This shortage of native labour seriously reduced the tonnage milled, and the working costs were consequently considerably higher. This adverse influence continued until February, when there was a large influx of natives, who had hardly worked long enough to become efficient when, unfortunately, the position was again upset in March by the strike of underground employees, which stopped all hoisting of ore for four days. The loss of time and general disorganisation of work consequent on the strike were responsible for a loss of £2,495 on the operations for that month. This was followed by an accident to one of the hoisting engines at the East Shaft, which has since restricted the tonnage output. New drums have been fitted to the hoist but it was not until the 23rd instant that it was again brought into commission. In the face of these difficulties, it is not surprising that the profits forecasted have not materialised during the current year. Whilst the current month's operations will prob-

ably show a loss, as far as can be seen at present, the mine is now in a position to again earn profits and there is every reason to expect that, notwithstanding our troubles during the first five months of this year, the consulting engineer's forecast in his report, which is now before you, to the effect that "the mine will be able to continue working throughout 1919, and earn more profit than it did last year" may yet eventuate.

Since the issue of the annual report a vacancy occurred on the Board of Directors by the resignation of Mr. F. R. Lynch. The Board has filled this vacancy, and another one which has existed since the retirement of Mr. J. Jolly in 1917, by appointing Messrs. W. P. Fisher and Edgar Hyman as Directors. These gentlemen are unconnected with any Group.

During the year a further 14 employees enlisted for active service. The total enlistments from the mine have amounted to 165; the average white labour strength is 306, and you will thus see what a large percentage of the strength have been on active service. I regret to say that Lieutenant P. V. Delacour was killed in action. The majority of the company's employees who have been on active service are now returning to the mine. On behalf of the board, I wish to tender thanks to the consulting engineer, Mr. E. H. Clifford, to our manager, Mr. A. J. Jones, and to his staff, for the good work done during the past year.

Shareholders' Policy.

The Shareholders' Protection Association have issued a circular, in which they canvass for proxies for this meeting. Those of you who have received this document will note that the association state: "No serious attempt has been made to cope with the situation as it really is or formulate a clear policy for the benefit of shareholders." The writers cannot have read the past reports issued to shareholders, or else a statement such as the above could not have been made. The present position is that the board is carrying out the policy of which shareholders were first advised two years ago, and in its carrying out a good patch of Main Reef has been discovered. This definite policy, viz., the stoppage of shaft sinking and continuation of operations as long as profits can be earned, will be continued unless and until there is some evidence to warrant the resumption of shaft sinking. You who were present at our last meeting know that there was then a strong feeling amongst shareholders that the company should be wound up immediately. I suggested, in place of the proposal then put forward for the immediate liquidation of the company, that the board should be asked to consider the matter, the object being to enable the board to obtain a full report upon the probable value to be realised from the company's assets and the effect of the then recent strike of good Main Reef on the 17th and 18th levels east of the East shaft. Finally, the following resolution was carried: "That it be a recommendation from this meeting that the board take into consideration that it is advisable, in the interests of shareholders to consider the immediate voluntary liquidation of the company." This resolution was proposed by Mr. L. J. Wolff and seconded by Mr. J. Stephen.

We know that Mr. Stephen is one of the gentlemen associated with the Shareholders' Protection Association, because we find his name heads the list of those in whose favour the As-

sociation in canvassing for proxies; so that you will note that whereas Mr. Stephen was in favour of the immediate winding-up of the company twelve months ago, he is now party to a circular issued by the Association, which states:

"There is not the slightest necessity to consider or discuss the question of closing down, if the interests of the Knight Central shareholders are alone considered."

You would hardly think that such a statement could emanate from the gentleman who, at the last meeting, seconded the resolution calling upon the Board to consider the immediate liquidation of the company.

Independent Directors.

In the circular reference is made to recent purchases of shares in this company "evidently with the view of increasing their voting power" by the Central Mining and Investment Corporation, and you are told that as a consequence there has been a considerable rise in the market value of the shares; this, it is stated, is evidence of the wholesome influence by the Association. I may here say that that Corporation is now the largest individual shareholder in the company; and in regard to recent purchases of shares it may interest you to know that the same Mr. Stephen has increased his holding from 2,000 shares at the date of our last annual meeting to 13,000 now—so that evidently he also has been buying with the view of increasing his voting power; but the Shareholders' Protection Association do not tell you anything about Mr. Stephen's activities in the shares.

A reference is made in the circular to the recent appointment of two gentlemen on the Board of this company, and it is suggested that such appointments might have been postponed until the general meeting. Seeing that the whole of the directors retire at this meeting, there can certainly be no objection to these gentlemen holding office until the meeting. I have already advised you that the gentlemen elected to the vacancies on the board are connected with the Central Mining-Rand Mines Group. The board is now composed of three nominees of that group and four independent directors, viz., Messrs. R. R. Hollins, P. Dreyfus, W. P. Fisher and Edgar Hyman, so that you will see that the majority of the board consists of directors independent of the group.

I now record my protest against the following statement of the Shareholders' Protection Association "It is clear that so long as the Corner House has control the shareholders cannot expect permanently satisfactory results." I state that this is a grossly untrue assertion, and I state further that the board and the administrative officials of this company have at all times conscientiously laboured for the good of shareholders.

I would also draw your attention to the following further statement:

"Careful inspection of the mine and a report made on behalf of the Association justifies the assertion that if the present scheme of working is abandoned and a more economical one adopted shareholders can confidently look for improved results."

This statement cannot be justified by the Association, and it is impossible to improve the mine's position by abandoning the present schemes of working which has opened up a large quantity of high grade ore since our last meeting. I call upon the Association to inform shareholders by

whom the report was made, what it contains, and to demonstrate how shareholders can expect to look for improved results other than in the direction indicated by my remarks and the reports before you.

In reply to Mr. Gamble, the Chairman said that no attempt had been made to exploit the area south of the Simmer dyke since the last meeting, when it was fully explained what the result of exploratory work had been.

The report and accounts were adopted, Mr. Gamble alone voting against.

The meeting approved of the appointments to the directorate referred to by the chairman, and the directors were re-elected. Messrs. C. L. Andersson and Co. and Charles Stuart were reappointed auditors.

NEW KLEINFONTEIN.

At the annual meeting of the New Kleinfontein Company, Ltd., held on May 30 in the board-room, National Bank Buildings, the chairman, Col. W. Dalrymple, in moving the adoption of the report and accounts, said that the year 1918 has been a disappointing one. The revenue from gold, at £860,285, showed a falling off of £132,286 as compared with the previous year, due in a measure to a shortfall of 110,350 tons in the tonnage crushed, while working costs at £810,457 reflected an increase of £34,175. The working profit was £49,829, from which had to be deducted interest on loans £7,637, and expenditure on capital account £25,018; and, after allowing for a small amount realised by the sale of old machinery and for an adjustment of the estimate of Government taxes in 1917, we carried forward a balance of £135,645, as compared with £115,548 at the end of 1917. The total footage driven, risen and sunk in all sections of the mine, excluding shaft sinking, was 17,365 feet compared with 20,016 feet in 1917, the shortfall being due to the inadequacy of the supply of native labour. The sampling figures, while showing a reduction of 2 inches in the stoping width, reflected a considerable improvement in value over last year's development, namely, 1.01 dwts., put that was due to selective development, it being necessary with the shortage of native labour, and owing to the circumstances in which the mine was placed, to make a special effort to push forward the best faces. The ore reserves on the present day working basis show a falling off of 166,000 tons, but a slight increase of .14 dwts. in value, the figures for 31st December, 1918, being 2,046,000 tons, having an average value of 5.78 dwts., over a stoping width of 59.52 inches. The chairman reviewed at length the development operations and the results disclosed, and the serious effects of the epidemic on the native labour force. The low-water mark in the native labour position was reached about 10th January last, since which time conditions had improved.

Increased Costs.

In emphasising the heavy increase in the costs of production on these fields, the chairman gave the comparative figures of the company for 1918 and 1914. The directors' report gave a figure of 4s. 4.5d. as being the increase which had come about in the last four years due to increased cost of stores and wages, war bonuses, allowances to dependents of employees on active service and donations to war funds and the total

increase of cost per ton milled in 1918 as compared with 1914 was 6s. 5.1d. There was a falling off in efficiency which, in a measure, was only to be expected with so considerable a proportion of skilled white employees on active service, and it had been undoubtedly accentuated by the shortening of working hours, which alone was estimated to account for a loss of 10 per cent of the tonnage obtainable before the hours were shortened. The sum involved in the increase of 4s. 4.5d. due to war conditions, including the increase in realisation charges, was no less than £156,564, equal to a dividend of 13½ per cent. With such an overwhelming burden, it is hardly to be wondered that the company, in common with many others, was finding difficulty in keeping its head above water, especially as, added to this, there were other increases due to the more expensive working of the Apex Section representing a further 1s. 10.9d. per ton milled, or £64,381, equal to a dividend of 5½ per cent. But shareholders must remember that this huge area was being opened up entirely by means of profits earned in the older mine. The chairman gave details of the companies' general charges in order to satisfy an inquiry. Sympathetic reference was made to the death on active service of three employees, George Berry, Arthur William Bennett and Henry Kitchinbrand. Others had, unfortunately, been wounded. The total amount paid to employees on active service and their dependents during 1918 was £6,580. Employees contributions totalled £2,975.

White Employees.

"While the board," concluded the chairman, "fully appreciates its duty and responsibility to shareholders as guardian of the money invested by them in the business, and realise that they should get a reasonable return for such money, it feels also, and feels very deeply, the great obligations of the company to its employees. At the present moment your company employs 721 white men, of whom 552 are married and 169 single. A number of these, officials and others, have spent the best part of their lives in the employ of the company, giving loyal and faithful service, and the married men are now meeting the responsibility of bringing up young families and seeing that they are efficiently educated to qualify them for the obligations of citizenship. There are from 750 to 1,000 children so dependent on our employees, and any conditions compelling the company to cease operations would indeed be a disaster. Your company has been in existence since 1893. During its life it has paid 14 millions in dividends to shareholders, and under pre-war conditions would still have a successful career in front of it. In anticipation of the old mine being worked out, the additional areas of Apex and Benoni were acquired and are being exploited with the greatest vigour with the means at our disposal. At the present moment the company is passing through a most serious crisis, but your directors anticipated, to some extent, the effects of war conditions on the industry, and so strengthened its financial position that it was able to meet the crisis, and it is to be hoped that with some reduction in working costs we shall be enabled to recover, in some measure at least, our pre-war position as a dividend payer." The report and accounts were adopted.

THE WIT. DEEP.

The only question raised at the first annual meeting of shareholders in the Wit. Deep under the new regime was in regard to the election of auditors. The chairman, Mr. E. Deeble, moved that Messrs. Robert Hays and Co. be appointed, and Mr. Frank Raleigh moved as an amendment that the retiring auditors, Messrs. Douglas Low and Co., and H. J. Lamb, be re-elected. Mr. J. E. Jones and Mr. Dreyfus spoke in favour of the retiring auditors, and Mr. A. E. O'Flaherty replied that the board was being guided solely by economy. Only seven voted in favour of the amendment, and Messrs. Robert Hays and Co. were consequently appointed. The retiring auditors were voted 150 guineas each for the past audit.

The report of the directors was out of the ordinary. The majority of the former board submitted a report, and Messrs. Gamble and Holland submitted a minority report, in which they contended that the losses experienced in the past year were not due to native labour and increased cost of stores and white wages, "but to the blameworthy neglect of directors in allowing the east shaft to fall into such grave and dangerous disrepair that it had to be closed down." To that the other directors replied that the allegation made was a gross misstatement and affirmed that the chief causes of the unsatisfactory results obtained were the shortage of native labour and the increase in the cost of stores and white labour. The condition of the shaft, they explained, was unsatisfactory, and this fact was explained to shareholders, but the statement that it was in a state of grave and dangerous disrepair was not true. The postponement of the re-conditioning of the shaft, so far from being neglected was, under the circumstances, the proper and most economical policy to adopt. The majority of incline shafts on the Rand have to be dealt with in precisely the same way after they have been in use for a prolonged period. The shaft in question had been in use for about 20 years."

Then the new board submitted a supplementary report announcing that Mr. James Johns had succeeded Mr. Milne as manager of the mine and giving details of operations during March.

In these circumstances the chairman said no good purpose would be served by their passing either the majority or the minority report. They belong to the past. He thought that that portion of the annual report for the year 1918 which referred to finance and the financial statement should be adopted. He moved that the balance sheet revenue account for the year 1918 and the auditors' report be adopted, together with such portions of the reports of the various directors which referred to the accounts.

In the course of his speech the chairman said he could not resist congratulating shareholders on the fact that the Wit. Deep was not closed down, and that it was no longer on any list of mines recommended, or condemned, to be closed down. A good deal of pressure was being put upon members of their board to take a hand in saving one or more of the mines that were threatened with closing down, but the shareholders agree that the first concern as a board, was to secure for the Witwatersrand Deep, a prosperous and natural old age. He stated that the pleasantest relations had been established between the directorate and the men on the mine, and that the

directors had had the unusual privilege of being invited by the men to meet them in a social evening, an event which augured favourably for the future.

Prospects of the Mine.

In regard to the prospects of the mine the chairman said they did not anticipate being able to announce profits for a short period. The condition of the mine as they received it made that practically impossible. On the other hand, they were assured that the present market quotation of Wit. Deep shares was far below their intrinsic value. As a large shareholder himself he was quite content with the outlook. The manager reported that development in the lower levels continued to be very satisfactory. During the first quarter of the year they developed 1,143 feet; the footage sampled 815 feet, showing an assay value of 10.1 dwts over a stoping width of 50.3 inches. During April they developed 387 feet, sampled 280 feet, showing an average value of 12.9 dwts. over 41.2 inches. That was in the southern portion now being opened up. There was every reason, therefore, to be highly satisfied with the values. Nature had made the Wit. Deep a rich mine and he was convinced that the mine would be a profit payer for many years to come. The reason why he had not anticipated very early profits was that the equipment of the east shaft was incomplete. In order to be able to provide the mine with the necessary hoisting equipment the directors had seized a favourable opportunity to sell 17,000 shares held by the company in the Victoria Falls and Transvaal Power Co., Ltd., for the sum of £18,700, a figure which it would be observed showed a profit of £1,700 on the cost of these shares. That sum was earmarked to provide for the necessary equipment under order. In the meantime it stood to the credit of the company at the bank. Meanwhile the board was giving careful attention to economical administration and they were reducing expenses and entering into more favourable contracts wherever possible.

Mr. O'Flaherty, in seconding the motion, gave further details of development, and said the ore developed in the past four months was only 7,000 tons less than the total developed in the year previous and was of higher value.

The motion was carried without discussion, and Mr. E. G. Bryant was elected to the board in the place of Mr. W. E. Bloch, resigned.

GOVERNMENT AREAS.

At the Government Areas meeting, a report of which appeared in our last issue, Mr. G. Inroth, in seconding the chairman's speech said:—"There is one item in the chairman's statement to which I would like to make a short reference. It is an item of £8,200 for which this company has been assessed in connection with the Provincial Gold Profits Tax. Iniquitous as the tax is in its incidence as applied to the New Modderfontein and other mining companies similarly placed, it is unpardonable if enforced on this, the Government Areas Gold Mining Company. In this connection a letter was addressed by your chairman to the Honourable the Minister of Mines, of which the following are the salient points:

"The contemplated action of the Provincial Council, if allowed to operate, would constitute a distinct breach of the spirit of the lease under which the Government Gold Mining Areas (Modderfontein) Consolidated, Ltd., holds its claims from the Government. Under the Precious and Base Metals Act, 1908, of the Transvaal, the then Government granted a lease—dated the 27th January, 1910—of certain mining lands to this company's predecessor in title on condition that the land was to be worked

by a company formed by the lessees, which company was to pay, in lieu of taxation, a graded proportion of its profits to the Government—after due payment of which the Government undertook to hold the company free from any Governmental taxation on profits during the continuance of the lease (Clause 14). The fourteenth clause of the lease is an undertaking on the part of the Government that no taxation on profits—save that specified in the lease—will be placed upon the working of the leased area; and it was in view of this guarantee that the taxation stipulated for in the lease was agreed to—had it been otherwise, it is reasonable to suppose that a somewhat different scale of payment would have been submitted to the Government.

"Not only has the Union Parliament inherited the obligations of its predecessors, but by modifying the lease of the Government Gold Mining Areas (as has recently been done) it has accepted the terms of the lease in toto and made itself further responsible for the due observance of these terms. It has recognised this obligation by exempting the company from the incidence of the dividend tax (other than the Special War Levy) under the Income Tax (Consolidation) Act, 1917. In these circumstances, seeing that the Provincial Council of the Transvaal seeks by its Provincial Gold Profits Tax (Ordinance No. 4 of 1918) to infringe Clauses Nos. 11 and 14 of the lease granted by the late Transvaal Government, and at present held by the Government Gold Mining Areas (Modderfontein) Consolidated, Ltd., I am instructed by the Board of this company to approach you with the request that you will afford us protection by taking the necessary steps to ensure the operation of the guarantee against taxation on profits given to

the lessees by the late Government—and specially enumerated as one of the conditions of the lease—being given full and permanent effect to by preventing the incidence of any taxation imposed by the Provincial Council from falling on the profits or net produce of the company's mine."

These points were advanced by your chairman and myself to Mr. Milan, and he gave us a very sympathetic hearing, as is his wont, but told us that the Government could not afford relief then, as he understood the matter would form the subject of litigation. We then informed him that it was not from the legal standpoint that we were approaching him, but from the point of view of equity and as affecting the credit of the country. The Minister replied that if the Courts should decide against us, the Government would seriously have to take our case into consideration. Has the Government considered this matter, and what is the result? The only intimation we have had is a demand for the payment of the assessment rate (to which so far we have not responded).

Question of Patriotism.

Now I see that Mr. Orr, the Minister of Finance, in the course of a debate in the House on Monday, is reported to have made the following statement:—

"Mr. Orr asked whether it was too much to expect that the inhabitants of South Africa should be patriotic in the matter of the new loan, and come to the assistance of themselves as represented by the Government, and not press for the uttermost farthing of the interest they wanted to exact. As regarded the so-called heaviness of the taxation on the Union, the country should be the happiest in the world."

This is a general statement, an appeal to the patriotism of the people of South

Africa to respond generously to a new loan which the Government contemplates raising. I am sure, gentlemen, the worst enemy of the industry and of the people of Johannesburg cannot accuse us of want of patriotism. No, that is not where the shoe pinches. Mr. Orr will have to find some other ground for inducing the people of South Africa to respond to his invitation, and one of them is, in my opinion, the removal of the impression of such unjustifiable taxation as the one to which I have referred—the Provincial Gold Profits Tax. Taxation of this kind is calculated to shake the credit of the country, for it touches what I would call security of contract. If the principle of this taxation is upheld there is no reason why the Provincial Council or similar bodies should not, instead of the present tax which rises to 4 per cent. on the profits, levy a 25 per cent. tax. We are advised that if the Government Areas Company is liable for this Provincial gold taxation, that body would have an equal right to tax the revenue from Union Bonds, and the Government, having admitted the principle, as far as the company is concerned, would find it difficult to oppose such a tax. I ask you, gentlemen, how can the Government expect a liberal response from the South African public to their invitation on such conditions? How can it expect to attract capital so much needed for the development of this young country when capital is menaced by taxation of this kind? Let the Government show its sympathy in this great industry in a practical way instead of making it the milch cow of South Africa. The whole of the country is dependent upon its prosperity: your farmer, your merchant, your shopkeeper, your everybody, and if the Government will only realise that fact, then the wish of the Minister of Finance, which we all share, will be gratified, and that is that this country should be the happiest in the world.

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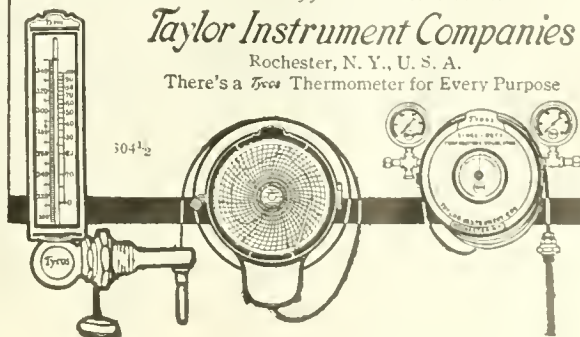
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NOTICE to SHAREHOLDERS

NOTICE IS HEREBY GIVEN that the Twenty-first ORDINARY GENERAL MEETING of Shareholders in the above Company will be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, on FRIDAY, 24th OCTOBER, 1919, at 11.30 in the forenoon, for the following purposes:—

- (1) To receive and consider the Reports of the Directors and Auditors, the Balance Sheet as at 30th June, 1919, and Statement of Income and Expenditure for the year ended 30th June, 1919.
- (2) To elect two Directors in the places of Messrs. D. Christopherson, C.B.E., and J. Andrew Cohen, who retire by rotation, but are eligible and offer themselves for re-election.
- (3) To appoint Auditors for the current year, and to fix the remuneration for the past year's audit.
- (4) To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 10th to 24th October, 1919, both days inclusive.

By order of the Board,

THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA,
LIMITED, Secretaries.
Per F. H. DOWN.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg.
2nd June, 1919.

The Simmer & Jack Proprietary Mines LIMITED.

(Incorporated in the Transvaal.)

NOTICE to SHAREHOLDERS

NOTICE IS HEREBY GIVEN that the Twenty-first ORDINARY GENERAL MEETING of Shareholders in the above Company will be held in the Board Room, Consolidated Gold Fields Buildings, Simmonds Street, Johannesburg, on FRIDAY, the 26th SEPTEMBER, 1919, at 11 o'clock in the forenoon, for the following purposes:—

- (1) To receive and consider the Reports of the Directors and Auditors, the Balance Sheet as at 30th June, 1919, and Statement of Income and Expenditure for the year ended 30th June, 1919.
- (2) To elect two Directors in the places of Messrs. D. Christopherson, C.B.E., and C. H. Barclay, who retire by rotation, but are eligible and offer themselves for re-election.
- (3) To appoint Auditors for the current year, and to fix the remuneration for the past year's audit.
- (4) To transact such other business as may be transacted at an Ordinary General Meeting.

The Transfer Books of the Company will be closed from the 12th to 26th September, 1919, both days inclusive.

Holders of Share Warrants to Bearer intending to vote at this Meeting must comply with the regulations concerning the issue of Share Warrants.

By order of the Board,

THE CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA,
LIMITED, Secretaries.
Per F. H. DOWN.

Head Office:
Consolidated Gold Fields Buildings,
Simmonds Street, Johannesburg.
2nd June, 1919

THE
S. A. Mining
AND
Engineering Journal

WITH WHICH IS INCORPORATED

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NOTICE.—The postage of this issue of the *S.A. Mining and Engineering Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

The Explosives Combine.

The *Cape Times* is informed that there is no truth in the report that the Cape Explosives Works, Ltd., are to be merged in the Explosives Trades, Ltd. Negotiations—so far without result—have taken place for the acquisition of the Modderfontein and Umbogintwini factories by the De Beers Company, with a view of cheapening the cost of explosives to the mining industry.

* * * *

The Standard Bank.

The Standard Bank has had another excellent year; and the record of continued progress contained in the chairman's speech—printed elsewhere in this issue—is eloquent of successful enterprise and sound management. Lord Sydenham, who presided at the recent annual meeting, was able to point to figures that showed expansion in every direction; and it must have been most gratifying to the directors and shareholders to listen to the high tributes paid to the management of the bank from representative South Africans like the Hon. H. L. Currey. The Standard Bank plays an enormous part in the economic life of South Africa, with which, indeed, it has grown through the years. The wonderful progress in our trade and commerce of late is reflected in the globular figures of the bank's balance-sheet and it cannot be doubted that much of that progress is due to the careful and conservative handling of the liquid assets of the country by the able administrators of the Bank. To several of the points of general interest in the annual review from the Chair of business conditions we hope to return, and in the meanwhile the speech itself may be commended as an admirable antidote for the depression induced by dwelling on the immediate outlook for the mining industry.

* * * *

Saldanha Bay Harbour and Railway.

The report of the Saldanha Bay Harbour and Railway Company for the year ended 30th September last states that since the last report more plots of land have been sold at Saldanha Bay through the company's agents in South Africa. Several new houses have been erected by some of the purchasers of plots, and the building of others is under contemplation, as the demand is still greatly in excess of the local accommodation. Negotiations for the sale of the whole of the company's unsold property were also entered into on two different occasions with strong and influential financial groups in South Africa, who, unfortunately, were compelled to abandon the same for reasons, however, in no way disparaging to the proposition. According to advices recently received from the company's representative in South Africa, there is every reason to anticipate that other opportunities may shortly occur for disposing of the whole of the company's property on terms that will justify the directors in accepting the same. The accounts show a loss of £2,620, increasing the debit balance brought forward to £27,228.

* * * *

Some Remarkable Diamond Finds.

During the past week we have been privileged to inspect two valuable and interesting parcels of diamonds—the one from the Aliwal North fields and the other from the Monteleo property. The first-named exhibit has been on view at the "Natal" Bank branch of the National Bank and consists of 425 carats. Amongst the stones is a yellow octohedron of 30 carats. The Monteleo parcel is of most exquisite quality, and the bulk of it has been valued at not less than £40 per carat. The first parcel received from the Aliwal North fields was sold for £9,500 the other day. The size and the quality of the stones were both remarkable, the parcel including a large amber-coloured stone of 50 carats, while there were quite a number of others of 13 and 11 carats—beautifully clear stones and absolutely without a blemish. The total quantity was 723 carats, and the purchase price works out at £13 a carat. Both parcels are part of a two months' find at Rouxville, on the farm Klipfontein, about eight miles from Aliwal North.

Here there are four white diggers working a shaft which is now about 50 feet deep, and in the last three months they have taken out over £20,000 worth of stones. The place has been known to be diamond-bearing since 1916, but the chief success has been won since July, 1918. From that date a total of 4,313 carats have been sold at a value of £37,259. The total takings of the last two months have been approximately £13,815, the other portion of the parcel having been sold in Johannesburg for £4,300. We understand that a company, with which several influential gentlemen are associated, is in course of formation in Johannesburg to further exploit these Aliwal North fields.

* * * *

The Central Mining and the New Elmore Process.

The Chemical and Metallurgical Corporation, Ltd., has been registered at Somerset House, with a nominal capital of £1,200,000 in 200,000 8 per cent. cum. pref. and 1,000,000 ordinary shares of £1 each. Its objects are: To acquire from F. E. Elmore, of Three Fields, Boxmoor, Herts, certain British, foreign and Colonial patents, plant, machinery, apparatus and materials (the purchase consideration being £1,000,000 in ordinary shares and £55,000 in cash); to acquire any patents and rights relating to the extraction of metals and the blending or amalgamation of ores and minerals, including zinc, lead and spelter, etc. Minimum cash subscription, seven shares. F. E. Elmore is promoter as well as vendor. The first directors are: J. A. Agnew, 1 London Wall Buildings, E.C., mining engineer; F. W. Baker, 341 Salisbury House, E.C., solicitor; H. Guedalla, F.C.A., 1 Broad Street Place, E.C.; H. F. Marriott, 1 London Wall Buildings, E.C., consulting engineer Central Mining and Investment Corporation; W. McDermott, Moor-gate Hall, Finsbury Pavement, E.C., mining engineer. It has been known for some time that Mr. Elmore was developing a process dealing with lead and zinc ores, and it is said that great success has attended his efforts. Presumably therefore this is one of the patents which the new company is to acquire. It is understood that the process is particularly well adapted to such ores as those found in the Rhodesia Broken Hill Co.'s concession. Extraction in such cases has never approached to anything like perfection, so that a substantial increase in the percentage should greatly benefit the shareholders. The names of the first directors are an indication of the importance of the undertaking.

* * * *

The Maraisdrift Flotation.

A scheme has been promulgated for the development of the farm Maraisdrift jointly with the adjoining farm Klipportje, owned by the H.E. Proprietary. The following remarks made by Mr. Latilla at a recent meeting of the Rhodesia Exploration, which company owns the remaining two-thirds' interest in Maraisdrift, explains the proposal:—"I do not want to excite anyone's optimism unduly, but there are two points you should keep in mind; one is that in Maraisdrift there is an element of practically assured value, as well as an element of speculation. You will see by the map that we are almost next door to the Sub Nigel property. Now, you may take it as nearly certain as anything of this kind can be, that the reef which the Sub Nigel is working—whatever its name may be—underlies a great part of the Maraisdrift. That is the element of certainty. Then it is believed that the Van Ryn Reef, which, as you know, is enormously valuable, also runs through Maraisdrift. I will not go into the details of the evidence of this, but I may say that it is growing greater every day. That is the element of speculation I referred to, but I need not tell you that it opens up very great possibilities. The other point I want you to keep in mind is this—whenever you hear the Far Eastern Rand spoken about (and you will very often in the near future) you will realise that this company occupies a most important position practically in the middle of it. In the scheme referred to we shall hope to have associated with us one of the big groups. Active development work is to be commenced forthwith, and if the results are encouraging a company is to be formed on the following lines:—A nominal capital of 1,250,000 shares of £1 each, of which

550,000 shares would be issued to the vendors in the proportion of approximately 58 per cent. on account of Maraisdrift and 42 per cent on account of Klipportje, and 600,000 shares issued for working capital, leaving 100,000 shares in reserve. The big group referred to would have the right to subscribe for one-half of the working capital shares and the vendor companies the other half. One-third interest has been acquired by the Union and Rhodesian Trust, Ltd., in Maraisdrift to be represented by 106,333 shares in the working company. The other two holders are Rhodesia Exploration, which would be represented by approximately 213,000 shares, and the H.E. Proprietary by 231,000."

* * * *

Anglo-French Exploration.

At the recent meeting in London of the Anglo-French Exploration Co., Ltd., the point of most general interest raised by the chairman, Mr. F. A. Robinson, and one which became very prominent in the Kaffir market was his assertion that "it is now understood that the (Empire's gold) mines are to have a free market for their gold, and are shortly to be at liberty to sell it to the best advantage." The suggestion is that the bullion will still come to the Bank of England, the Bank paying the same price at which it could be sold in the most favourable market. For the above among other reasons it seemed, said Mr. Robinson, that without being optimistic there are several features in the situation which point to an early improvement in the Rand gold mining industry. The chairman joined in the now general chorus of belief in the future of the Far Eastern Rand, and quoted the company's manager as writing a few weeks ago with regard to this region:—"In spite of all the troubles of the past year steady progress has been made in this district, both by the expansion of operations on the mines which have been producing for some years, and by further development on the mines which have not yet reached the producing stage. The results of the past year's work in this district, viewed as a whole, and taking into account the exceptional difficulties experienced, are undoubtedly most satisfactory, and fully justify the belief that the Far East Rand has a great future." Mr. Robinson, exemplifying the wide scope of the Anglo-French Co.'s interests, also made instructive references to Cornish tin mining and Southern Rhodesian land prospects.

* * * *

Registration of Mining Engineers.

At the annual meeting of the Institution of Mining and Metallurgy recently the retiring President, Mr. Hugh F. Marriott, remarked, in the course of his speech, upon the great need of pairing off the worker and the work that was waiting for him. He went on to observe in this connection that the institution had made a commencement towards the solution of the problem and had compiled lists of engineers coming within the limits of their profession, which gave those who had positions to be filled facilities for selecting the men they required. It was now for the industry to make this exchange a success by using it for the purposes for which it was brought into existence. Members, on their part, would assist if they would take care that their records were kept up to date, otherwise much useless correspondence would ensue. They were—in keeping with the times—becoming more and more jealous of their professional status and efficiency as a body. That was as it should be, and the investing public stood to benefit in no small degree. The Imperial College was now demanding with no uncertain voice that it should be given its rightful position in education as a University, and the institution was with it in that movement heart and soul. The mining industry, and all interested in it, would be rendered more secure by the legal registration of mining and metallurgical engineers who were qualified to practise. This question of registration was engaging their serious attention, and their efforts were being directed towards the construction of machinery to give effect to that desirable additional safeguard in the interests of the industry and the public generally. The industry itself was in need of closer organisation for its own protection and advancement.

Royal School of Mines: Mining Geology Course.

In connection with their newly-instituted diploma course in mining geology, the authorities of the Royal School of Mines, London, are desirous of obtaining, as soon as possible, representative samples of ores and other economic minerals, and of the rocks associated with them, from well-known deposits or important mining fields in all parts of the world. What is aimed at is the building up of a series of small collections, each illustrating the geology and deposits of some well-known mine or mining district, and each including examples of the various rock-types with which the deposit is associated, specimens of the principal minerals which it contains, and samples of the ore or other raw material as mined and of the dressed products as sent to the smelters or placed upon the market. In cases where complete sets are not procurable, isolated specimens of characteristic ores, ore-minerals, or rocks from any important mining localities would be welcomed. The Council of the Institution of Mining and Metallurgy, wishing to encourage the provision of a more adequate training in mining geology than has hitherto been available for British students, desires to make this need of the school widely known. Members of the institution, associates of the school, or others engaged in the mineral industry, who may be willing to present or procure specimens for the collections, are requested to communicate with Professor C. Gilbert Cullis, Royal School of Mines, London, S.W. 7, stating the nature and the amount of the material offered, and giving an address to which application for it may be made. The school authorities would be most grateful for any such donations and would be happy to defray the cost of carriage of specimens suitable for their requirements.

* * * *

I. of M. & M.: Mr. Marriott the Introducer of the Tanks.

The important part played by miners in the war is not sufficiently realised by the public at large, but they have unquestionably made history and left an imperishable name. Most of the tunnelling companies were officered by members of the I. M. & M., and in mail week an intensely interesting paper was read at Burlington House by Major H. Standish Ball, R.E., Assoc. Inst. M.M., on "The Work of the Miner on the Western Front." In the evening there was an informal dinner at the Café Monico, at which between 150 and 200 were present, a large proportion being in uniform. Mr. Hugh F. Marriott, the president of the institution, occupied the chair, and gave a hearty welcome to the guests. As a tribute to the many who had fallen, he asked the company to stand and pay a silent mark of respect. In a brief, but witty, speech, he said, when proposing the toast of the "Tunnelling Companies," that if they had not made the world go round, they had certainly made it go up, and they had removed the wireworm and the Hun bacillus from the soil of France. Major-General E. Atkinson, in replying, said success was due to the fact that they belonged to the honoured profession, which had to undergo an arduous training and face the world in every zone. Brigadier-General Harvey mentioned incidentally of tunnelling and dugouts and extraordinary heroism and devotion to duty. Two officers took it by turns to remain fourteen days in a tunnel with the Germans tunnelling above them at a distance of a foot only—a wonderful example of bravery. The official report of this operation was laconic: "Mine went up; Germans were working at the time." Sir Lionel Phillips proposed the toast of "The Institution of Mining and Metallurgy," paying a high tribute to what can be done by means of organisation; and to this the President responded. In the course of a racy speech, Brigadier-General Swinton submitted the health of Mr. Marriott, whom he had known for decades as an earnest patriot and a thorough going mining engineer. In referring to the Tank Corps, to which he belonged, he said he desired to give credit to Mr. Marriott for what he had done. In 1914 Mr. Marriott called General Swinton's attention to a caterpillar form of tractor he had seen on the Continent, and made suggestions as to the uses to which it might be applied. Mr. Marriott consequently was the cause of the introduction of the tank. Mr. Marriott, in replying, said if it had not been for General Swinton's push and determination in the face of opposition the British Army might never have had tanks.

TOPICS OF THE WEEK.**THE GOVERNMENT AND THE MINES.**

DESPITE the earnest representations made on behalf of the mining industry, it looks as if the present session of the Union Parliament will end by having aggravated, rather than relieved, the plight of the low-grade mines. The new miners' phthisis legislation rushed through at the tag-end of the session is estimated to mean an impost of some £4,000,000 on the industry spread over the next few years, and this is gaily assented to by all parties in the face of the solemn and repeated warnings from the head of the mining industry. Last Monday the Government received a final protest from the President of the Chamber of Mines, couched in the strongest and plainest possible terms. The message stated that sixteen mines, giving direct employment to upwards of 5,000 white men were on the verge of closing down, and that the new burden imposed by the additional phthisis compensation would make their position simply hopeless. In the debate that took place on Monday in the Assembly the significance of these facts was brought out by Mr. Merriman and Mr. Jagger; and the extraordinary spectacle was witnessed of the best interests of the Rand being defended by two members for Cape constituencies. Mr. Merriman, we note, proposed that one-third of the contributions levied on the mines in respect of wages and of the silicosis rate should be paid by the miners. In support of his view he pointed to the high wages in the industry; to the fact that the proposed rates of compensation were the most generous ruling in any country; and to the experience of other countries that had found the principle of contribution a success. Mr. Jagger protested against the manner in which a measure of such importance had been rushed through the House; and he very rightly charged Mr. Malan with scrapping his own Bill and even conceding more than had been proposed in the extreme Sampson Bill. The men's contribution, he claimed, would have the effect of encouraging all parties to cut down the silicosis rate to the lowest possible figure, and without it, he predicted, the tendency would inevitably be for the men to take employment on the mines where there was a chance of getting the "ante-primary" compensation after a year or two underground. Sir Abe Bailey's contribution to the debate was very disappointing, and the Unionist members seem to have been stampeded by the shadow of the impending General Election. At any rate, not one of them had the courage to vote for Mr. Merriman's and Mr. Jagger's amendment, which was lost by a big majority. The vote brings out more clearly than ever the friendless position of the mining industry in the Union Parliament. The members for the Rand, whose business it should be to defend the industry, appear to have been the first to rat, and the Minister of Mines, we know only too well, is the last to sacrifice political expediency in the cause of abstract justice. What the result will be need not here be laboured. The quarterly meeting of the Chamber of Mines to be held next Monday will provide the President with an opportunity to set out the position which the industry, through the action and inaction of the Government, now finds itself. It is not for us to anticipate what will be said on this momentous occasion. Assuredly, however, one result will be that the people of the Rand will be left under no illusions regarding the consequences of the treatment of the industry by the Government and by those who are supposed to represent their interests in Parliament.

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OIL IN SOUTHERN AFRICA.

The British Government's Enterprise—An Object Lesson to the Union—Strong Presumptive Evidences—All Mineral Enterprises Anathema to the Union Government—Why Private Enterprise Has Failed—The Sakalava Company and its Policy and Errors—The Need for Thorough Testing—What Australia is Doing.

It is a symbol of the new order of things in the British Isles that the Home Government is taking a practical interest in the development of the mineral resources of the United Kingdom. During the war period Sir Lionel Phillips did most valuable work in the direction of encouraging enterprise in the long neglected metalliferous deposits of the Island Empire, and since the stern demands of war first began to impose industrial duty upon the Ministry of Munitions there has been greater activity in the winning of tin, tungsten, copper, lead and other metal-bearing ores from United Kingdom deposits than had been noticeable since the beginning of the decline of Cornish mining half a century ago.

THE RENAISSANCE OF ENGLISH MINING.

But the crowning effort in the renaissance of British mining is undoubtedly the discovery of oil in Derbyshire announced by Mr. Kellaway, Under Secretary for Munitions, in the House of Commons the other day. It would indeed be hard to over-estimate the importance of the location of extensive oil wells in the Midlands, not only to the United Kingdom but to the world at large. The past few years of strenuous destructive activity have taxed the earth's oil resources to their utmost and with the destruction of the Roumanian wells and the isolation of a great portion of the Russian fields through revolution and Bolshevik insanity a most serious shortage in oil production in the immediate future seems to be inevitable. The wonderful development of aviation and motor transport during the war has emphasized the fact that we of this generation are living in the opening years of the oil age, and the discovery announced by Mr. Kellaway the other day may reasonably be regarded as the most important development in subterranean history since the opening up of the Witwatersrand gold fields. The Under Secretary's announcement has its full measure of interest for this country. South Africa, in common with other parts of the world is in great need of petroleum. There is a marked shortage here at present and that shortage is at least likely to continue. A discovery of petroleum in Southern Africa or in the islands adjacent to the continent would be of immense value to the world at large and particularly to the Southern Hemisphere which, with the exception of the Dutch East Indies, contains no proved oil fields. More particularly still would it be of benefit to South Africa.

AUSTRALIA AND OIL.

We understand that the Commonwealth Government has offered a very large reward for the discovery of oil in any part of the Australian Continent and the location of oil in England should stimulate the people "down under" to make a serious effort to find petrol in a part of the world which is only presumptively oil bearing. There is also strong presumptive evidence of the existence of oil in the Southern African Continent; the evidence here is considerably stronger than it is in Australasia. But recently there has never been a word to show that the Union Government is in the least degree interested in the finding of oil in this country. Several experts have testified to the probability of oil occurring in payable quantities in the Cape Colony, along the eastern littoral of the Union of South Africa, in Portuguese East Africa and in Madagascar. But so far lukewarm private enterprises with an insufficiency of capital have alone endeavoured to prove the existence of payable oil wells in these regions. Hitherto these enterprises have failed—failed a lamentably through insufficiency of funds, inadequate drilling machinery, and lack of encouragement from the Government concerned. Not a bucketful of oil has been collected; the indications are good. The Parliament of the Union

cannot coerce the Portuguese into a sympathetic attitude towards their presumptive oil fields. Neither can it compel the French authorities in Madagascar to give rebates on machinery for oil well sinking brought into that island. But our Government can ask with authority for assistance to British capital operating in foreign territory, and it can assist directly and indirectly in the proper prospecting of the oil fields which are presumed on strong geological evidence to exist within our own borders, particularly in the vicinity of coal measures.

AN "ABOVE-BOARD" GOVERNMENT.

Our Government has done much more fantastic things in the past than lend practical assistance to an enterprise which if successful—and it well might be, if conducted in a proper manner—would bring abounding prosperity to the whole sub-continent. Our Government has, for instance, sent an expedition to Barbary to catch ostriches, and it is now concerned with an elephant exterminating side line. Any enterprise with a menagerie touch of enchantment about it seems to appeal to the legislators of the Union. It is essentially a Government with strong zoological and botanical leanings, but geology, so it seems, occupies an unimportant corner of the curriculum. It is unmistakably an above-ground Government—anything sub-terrestrial, as we have frequently remarked, is in the minds of the majority of members, a plutonic curse, an asset of Demos, and a

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possession of Beelzebub, put there to be taxed and imposed on or else ignored with godly indifference or terror. This attitude is all the more regrettable because South Africa is a country richly endowed with mineral wealth. Without its minerals the economic and political importance of the Union would be little greater than the economic and political importance of Liberia or San Salvador. Yet our gold mines are merely considered as instruments of revenue raising, the coal mines are allowed to languish because no effort has been made to develop an export trade, the base metal properties are unnoticed until they close down, and the livelihood of a certain portion of the community is imperilled, and the diamond mines are suffered to exist merely because they also bear a big share of the country's revenue. The present Government would doubtless spend a very large sum on experiments in connection with the electrification of locusts if it was represented to them with sufficient political force by the Backveld that such research was necessary. But at the same time our legislators would probably stand aghast at the suggestion that they should spend a limited amount of money on attempting to prove the existence of oil wells as the British Government has done.

THE FAILURE OF PRIVATE ENTERPRISE.

Private enterprise, it must be admitted, has failed to "strike oil" in the sub-continent. So far it has signally failed, but it is probable that an insufficiency of capital and lack of support have greatly conduced towards this failure. It is not within the bounds of probability that pay oil will be struck in a virgin country without adequate capital, sound practical supervision, and modern plant capable of drilling to a great depth. The only active enterprise in this region of the world is the Sakalava concern in Madagascar, and although prospects there are stated to be as good as ever anything in the nature of a gusher has not so far been

encountered. The failure of the Sakalava management to secure more satisfactory results is probably in no small degree due to the causes above enumerated and also to a not too encouraging attitude on the part of the French Government. If the Sakalava people are going to give their huge property a fair test it is high time they floated the concern on a proper basis and secured effective plant and practical technical administration. It is not likely that the company will ever secure good results if they resort to expedients of raising capital in penny numbers. And for the life of us we fail to see that any real good is likely to result from sending to Madagascar gentlemen who confess that they do not know an oil well from a whale-bone factory, no matter how sound these gentlemen may be from an ordinary and non-specialised business point of view. We think that the Union Government might well turn aside from its mealeie and ostrich dreams and ponder on the example and results achieved by the British Government in the Midlands of England. There are admitted to be strong presumptive evidences of the existence of oil in South Africa, and we certainly hold it would be worth while to have these indications thoroughly tested.

Belgian Congo Strike.

Reuter's correspondent at Elisabethville says that no further developments have taken place in connection with the strike. Nearly all the Belgians and one or two other nationals have returned to work, but the British and Greek sections appear to be still firmly resolved on a fight to a finish. Mr. Wheeler, general manager of the Union Minière, left for Europe last week. His sudden departure was a surprise to the whole of the staff.

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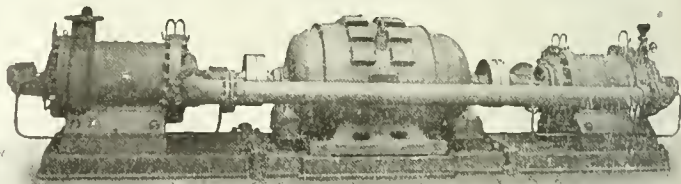
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IS JOHANNESBURG BUILT ON THE VAN RYN REEF?

Mr. Bleloch Says "Yes"—A Geological Debate at the E.R.P.M. Meeting—Troyeville a Rich Gold Field—Should the Bezuidenhout Valley be Thrown Open to Prospectors?—Sir Evelyn Wallers' Fervent Hope—Mr. Clifford and Dr. Mellor Protest—Exuberant Optimism a Cure for Virulent Pessimism.

It is not often that, at meetings of the leading Witwatersrand gold mining companies, shareholders are regaled by a wordy battle between geologists. We have recently become more or less accustomed to attacks on control and administration, but a stratigraphical debate is of a rather unusual nature. Those who attended the annual meeting of the East Rand Proprietary Mines a few days ago should therefore feel under an obligation to Mr. William Bleloch for his spirited speech in support of the two (or rather the three) reef theory which led to replies from Mr. E. H. Clifford, the company's consulting engineer, and also from Dr. Mellor. The dissertation enlivened what would otherwise have been a rather lugubrious gathering, for Sir Evelyn Wallers, who presided, had not got a very cheerful tale to tell. The nett result of last year's working was an excess of expenditure over revenue of £51,053, and this, considered in conjunction with the company's financial position, creates a situation which the chairman characterised as "very serious."

THE THREE REEF THEORY AGAIN.

Mr. Bleloch subsequently rose and contended that the company's misfortunes were in large degree attributable to an erroneous mining policy. He claimed that the company had worked on the wrong reef (the Blue Sky Reef, as he termed it) in the eastern section of the property, and this although the right ore body—the "Van Ryn Reef"—is in existence there. Readers of this paper are doubtless well acquainted with the essential features of Witwatersrand geology, *à la* Bleloch. A few weeks ago we terminated a lengthy series of articles on the Greater Heidelberg Gold Fields, in which we dealt exhaustively with Mr. Bleloch's theory that the Nigel, Van Ryn and Main Reefs are three separate ore bodies, and not one and the same ore body, as contended by orthodox geologists. It is obvious that if Mr. Bleloch's interpretation of the stratigraphy of the Witwatersrand is correct, and we have neglected a reef similar in richness to the reef from which the New Modderfontein and Government Areas Companies are each earning profits of over a million per annum, then surely the oft-repeated assertion that Johannesburg contains more brains to the square inch than any other town in the world falls to the ground immediately. Long ago Mr. Scott Alexander gave to readers of this journal a remarkable stratigraphical section across the Witwatersrand beds at Johannesburg, in which he identified various gold-bearing conglomerates according to our streets.

THE GOLD BENEATH THE CORNER HOUSE.

Mr. Bleloch is also of this view. According to the chief apostle of the geological heterodoxy, the Corner House itself is built over the Van Ryn Reef, the township of Troyeville is an immensely rich mining field, and Mr. Bleloch thinks that if the Government would throw open the Bezuidenhout Valley to prospectors the Rand in general and Johannesburg in particular would enter upon a new era of prosperity. We join with Sir Evelyn Wallers in fervently hoping that what Mr. Bleloch says is true. If this theory is correct it entirely disposes of the pessimistic opinions as to the future of Johannesburg which have recently appeared in this journal under the signature of a special correspondent. In very truth our streets would then be paved with gold, and if Johannesburg did not last it would only be because the whole town had to be pulled down in order to get at the many millions which Mr. Bleloch says lie below our feet.

AN ANTIDOTE TO PESSIMISM.

The pessimist has painted a doleful picture of the Corner House being turned into cheap residential and sparsely-tenanted flats with "geraniums in green boxes on the window sills." We do not like pessimism of this virulent type. We much prefer Mr. Bleloch's exuberant optimism. And if Mr. Bleloch is right we are more likely to see the house that Eckstein built pulled down in order to make room for the biggest mill on God's earth rather than witness its decadence into the horrible and seamy respectability of cheap flats. Candidly, Mr. Bleloch's picture of the Golden City seems to us a little too good to be true, but there is, we think, a great deal which merits investigation in his conviction that the eastern section of the E.R.P.M. and the mines immediately east and south-east thereof, which Mr. Bleloch contends have wasted five million pounds in attempting "to make this Blue Sky Reef payable" may yet hold geological surprises. We understand that just recently certain discoveries on the East Rand Proprietary itself have been made, and the country contiguous to the Boksburg break is still to us an unsolved geological enigma. At the meeting both Mr. Clifford and Dr. Mellor were emphatic in their protestations as to the untenability of Mr. Bleloch's thesis.

DR. MELLOR'S REJOINDER.

Dr. Mellor, in regard to Mr. Bleloch's contention that at the east end of the Cason the real reef had not been followed, and that something quite different had been followed in the Blue Sky section, said that long ago, when he was still a Government servant, he went into that point extremely carefully, and that he was able to follow the same body of reef, just as one was able to follow a thread or any substantial thing. When he could follow a thing like that he knew of no way of reasoning by which he could persuade himself it was not the same thing. Mr. Bleloch said the reef on the Blue Sky was not the same as it was in the Cason because the pebbles were small and it had less gold. They often saw the reef in a mine at the foot of a slope was entirely different to the reef at the top of it, but they saw the same reef continuously and saw the changes it underwent. They had discussed Mr. Bleloch's points for ten years, and most people seemed to be satisfied with the results obtained in that discussion.

ARE THE "DOGMATISTS" WRONG?

If Mr. Bleloch is right, then we cannot believe that the geological dogmatists are so convincing that they can "fool all the people all the time" and condemn millions of pounds' worth of gold lying at our feet to everlasting inactivity. But as we wrote in our Heidelberg articles we are quite prepared to have an open mind on the subject of reef nomenclature if Mr. Bleloch and his supporters can show payable values over lengthy stretches of his Van Ryn Reef either on the Southern Van Ryn in the Heidelberg district, the Free State, the Bezuidenhout Valley, or anywhere else for that matter. And if Mr. Bleloch's views are in time proved correct, and we find that the offices in which this article is written are underlain by a few thousand inch-pennyweights of Van Ryn Reef it will be a helpful and hopeful inspiration to us in our scribblings. If we are indeed sitting on the top of a New Modderfontein we do not for our part object to the demolition of that small portion of the Stock Exchange Buildings which this paper occupies in order to open up the millions that lie beneath the floors of this edifice, the millions which Mr. Bleloch says the builders of the Rand have rejected in their amazing lust for the low-grade deep levels of the now somewhat discredited "Main Reef" of the Central Rand.

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THE RAND'S ORE RESERVES.—II.

Individual Increases and Decreases—State Mines Head the List with Nearly Ten Million Tons—How Other Far East Mines Have Fared—Big Declines on the Central Rand—The Economic Factor—Half Our Ore Reserves Worth Seven Dwts. or Less per Ton—Some Facts and Figures to Ponder On.

IN our last issue we gave a table exhibiting the ore reserves of the Witwatersrand at the end of 1918. The grand total of payable reserves amounted to ninety million tons of ore, a decline of six million tons compared with the figures for the end of 1917. A week ago, in commenting on this table, we referred to the lack of uniformity existing amongst different companies and groups in regard to methods of declaring ore in reserve, and we also referred to the vast amount of low-grade ore existing in the mines; ore which would be transferred from the unworkable to the workable side of the ledger of the Rand's stock-in-trade by a happy swing of the pendulum of the industrial clock. The subject of ore reserves is of such importance that we return to the matter this week and now propose to deal with the outstanding development features of the leading mines.

STATE MINES: A FINE ACHIEVEMENT.

It was, of course, only to be expected that the 1918 figures should, by comparison with those of 1917, exhibit an increase in respect of the Far East Rand, and declines in Near East, Central and West Rand mines. The increase in the Far East Rand reserves has been largely accounted for by the development operations of one company—the Government Gold Mining Areas, or State Mines. During last year the ore reserves of this property were increased by 2½ million tons, whilst the value per ton is also better—roughly by 2s. per ton. This company had at the end of last year no less than nine and a half million tons, worth 8 dwts. over 78 ins., blocked out, and during the March quarter of the current year the reserves were increased by an additional 230,000 tons. Government Areas, with its four shafts and substantial reef widths, is in a position to develop huge tonnages both rapidly and cheaply and the company's pay ore reserves now exceed those of the New Modderfontein, which increased its tonnage from 8,914,000 tons at 8·5 dwts. to 9,000,000 tons at 8·6 dwts. in its last financial year. The New Modderfontein Company has recently been able to extend its development operations, but Government Areas, which now has a reserve of practically ten million tons, is easily the leading gold mine, not only of South Africa but of the world, in so far as developed tonnage of pay ore is concerned. It is worth noting that these two properties—Government Areas and New Modder—between them contain about 21 per cent. of the total developed pay ore reserves of the whole Rand.

OTHER FAR EAST VENTURES.

As to other Far East Rand mines, it is to be observed that there was a decline from 3,523,810 tons to 3,378,000 tons in the Modder B. reserve. The Van Ryn Deep statistics reveal an increase of nearly 200,000 tons. The Modder Deep reserves are 130,000 tons greater, and Geduld shows an improvement of 300,000 tons. As to the "C.M.S." subsidiaries, Brakpan reserves are down 550,000 tons, owing partly to shortfall in development, compared with stoping, but mainly to elimination of tonnage previously included, but which, as stoping progressed, proved to be below the pay limit. Springs Mines records a drop of 200,000 tons in spite of an increase in stoping width. The decrease is due to elimination of a large tonnage which as stoping progressed proved to be below the present pay limit. An estimate made by Mr. Davis, who succeeded Mr. Knecht as consulting engineer confirmed the figures, but revealed the very important fact that 1,117,000 tons were not available for stoping. Of this, 65,000 tons were in shaft pillars and 325,000 tons in haulage pillars. The balance of 727,000 tons comprises blocks which will become available on the completion of work in progress.

NEAR EAST, CENTRAL AND WEST RAND MINES.

In the other sections of the Witwatersrand there are some large declines to be noted in payable ore reserves. Prominent amongst these are the following (in round figures):

	Tons.
East Rand Proprietary Mines	165,000
Crown Mines	700,000
Nourse Mines	617,000
Simmer and Jack	515,000
Simmer Deep	118,000
Jupiter	230,000
Ferreira Deep	375,000
Rooipoort United	300,000
Bantjes Consolidated	375,000
Knights Deep	514,000
Luijpaardsvlei	150,000
Witwatersrand Deep	130,000
Aurora West	155,000
Randfontein Central	931,000
Wolluter	215,000
Village Main	120,000
New Goeh	120,000

The City Deep shows a small improvement in tonnage and an advance of 16 dwt. in value, and the Village Deep a substantial increase from 1,874,000 to 2,327,200 tons of slightly less value. At this property 1,160,000 tons were developed during the year (double the quantity crushed). This is partly explained owing to the company securing rights from the Government under Springfield Extension permitting ore hitherto partially developed to be transferred to the reserve.

THE IMPORTANCE OF THE LOW-GRADE TONNAGES.

The decrease in ore reserves at so many of the Near East, Central and West Rand mines is due to curtailment of development, the exhaustion of claim area (at the older mines), and also to the elimination of blocks hitherto reckoned payable, on account of the increase in working costs. The unfavourable economic factor has been responsible for the exclusion of millions of tons of ore from the stock-in-trade of the industry during the past year or two. War charges, excessive taxation and increased wages have swept a vast amount of the assets of the industry off the shelves of commerce as being unsaleable. The importance of bringing costs down to a figure which will admit of a large amount of this tonnage being worked cannot be over-estimated. Of the ninety million payable tons dealt with in our schedule, no less than forty-five and three-quarter million tons have an average value of 7 dwts. or less per ton. The recoverable value of this tonnage leaves a very small margin of profit with working costs at their present high level, and any further substantial advance in operating expenses would imperil the fate of the bulk of these 45,750,000 low-grade tons *which constitute slightly more than one-half of the total ore reserves of the Rand.* This undeniable fact is worth pondering on. A further marked advance in working costs would not only sound the immediate death knell of the lower-grade ventures—several are already on the verge of closing down—it would also imperil the operations of most of the medium-grade mines, and if South Africa is to depend for its prosperity on the eighteen companies with ore reserves worth on the average over 7 dwts. the majority of its inhabitants had better petition the Government to effect their immediate emigration to some other country where industry is less harshly dealt with than in the Union of South Africa.

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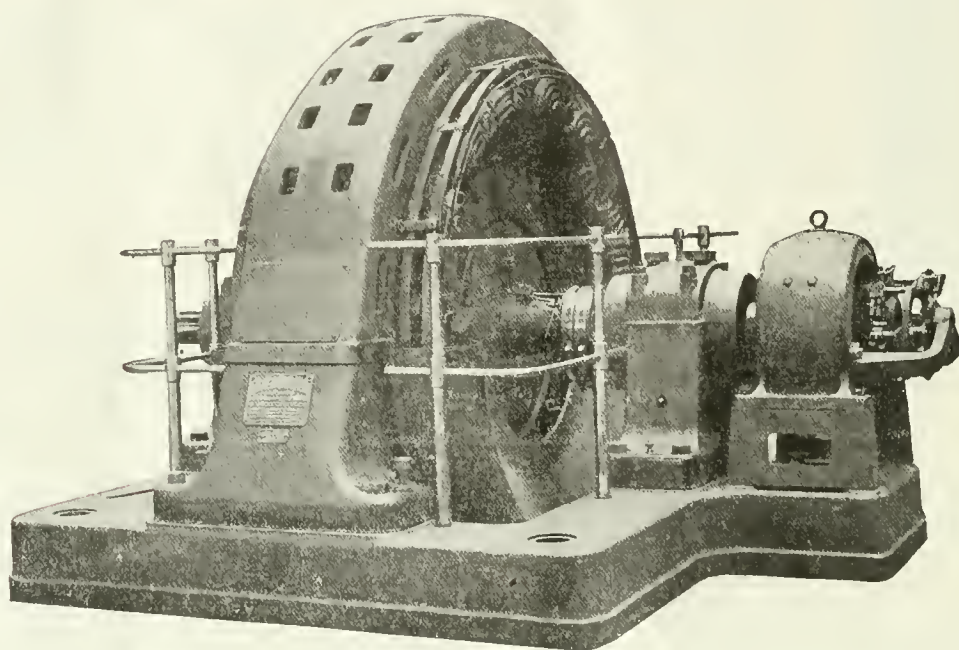
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THE MAY OUTPUT IN DETAIL.

30,051 Ozs. Better—Decrease in Native Labour Force—Brakpan and Government Areas' Larger Outputs.

DURING May the Transvaal mines produced 724,995 ozs. of fine gold compared with 694,944 ozs. for the shorter month of April, an increase of 30,051 ozs. The number of stamps in operation last month was 8,284 as against 8,264 in April, while the natives employed on the gold mines numbered 173,376, compared with 175,267 in April, a decrease of 1,891. For the Witwatersrand and outside districts the official gold production figures are as follows:

WITWATERSRAND.			
	Ozs.	Value.	
May	706,158	£2,999,566	
April	676,702	2,874,447	
Increase	29,456	125,119	
OUTSIDE DISTRICTS.			
May	18,837	80,017	
April	18,242	77,489	
Increase	595	2,528	
GRAND TOTAL.			
May	724,995	3,079,583	
April	694,944	2,951,936	
Increase	30,051	127,647	

The principal individual increases for May are Brakpan Mines, £30,681; Government Areas, £14,340; Simmer and Jack, £13,270; Robinson Deep, £10,742; Crown Mines, £8,075; and Geldenhuis Deep, £3,924; while the principal decreases are Ferreira Deep, £4,486; and Knight Central, £3,802.

STAMP POSITION.

The total number of stamps at work in May was 8,284, an increase of 20.

	Rand.	Outside.	Total.
May	7,994	290	8,284
April	7,959	305	8,264
Increase	35	—	20
Decrease	—	15	—

LABOUR FIGURES.

The native labour figures for the past three months are as follow:

	March.	April.	May.
On gold mines	175,620	175,267	173,376
On coal mines	11,168	11,906	12,232
On diamond mines	5,080	5,742	5,939
	191,868	192,915	191,547

INDIVIDUAL RETURNS.

WITWATERSRAND.			
	Value. £	Increase. £	Decrease. £
Aurora West	46,732	2,855	—
Bantjes	998	—	79
Brakpan	120,287	30,581	—
City and Suburban	32,410	3,645	—
City Deep	98,896	514	—
Con. Langlaagte	56,605	1,058	—
Con. Main Reef	75,733	548	—
Crown Mines	227,861	8,075	—
Durban Deep	35,490	9	—
E.R.P.M.	141,313	1,499	—
Ferreira Deep	52,455	—	4,486
Geduld Prop.	65,989	2,876	—
Geldenhuis Deep	58,368	3,921	—
Ginsberg	10,585	505	—
Government Areas	218,788	14,310	—

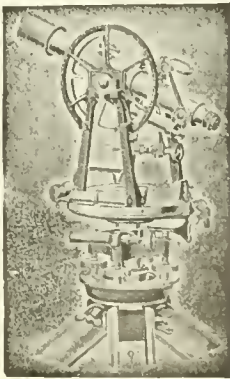
	Value. £	Increase. £	Decrease. £
Jupiter	24,348	395	—
Knight Central	26,565	—	3,802
Knights Deep	74,399	2,948	—
Langlaagte Estate	53,497	1,075	—
Luipaardsvlei	22,581	1,784	—
Meyer and Charlton	40,574	492	—
Modder B.	120,487	—	888
Modder Deep	93,170	3,925	—
New Goch	13,631	—	140
New Heriot	16,290	1,410	—
New Kleinfontein	71,557	—	705
New Modder	179,709	4,409	—
New Primrose	18,652	1,494	—
Nourse Mines	56,210	1,903	—
New Unified	12,205	170	—
Princess	27,746	2,276	—
Randfontein Central	166,163	3,458	—
Robinson	42,035	—	154
Robinson Deep	73,320	10,742	—
Roodepoort United	21,931	—	1,300
Rose Deep	64,396	1,135	—
Simmer and Jack	59,859	13,270	—
Simmer Deep	42,533	3,224	—
Springs	68,261	540	—
Van Ryn Estate	34,827	871	—
Van Ryn Deep	103,492	—	68
Village Main	25,835	2,596	—
Village Deep	68,405	5,229	—
Witwatersrand	42,783	2,051	—
Wit. Deep	36,280	—	769
West Rand Consolidated	39,053	632	—
Wolhuter	37,877	2,086	—
Miscellaneous	8,655	—	507

OUTSIDE DISTRICTS.

T.G.M.E.	24,777	599	—
Barrett	633	—	12
Glynn's	7,127	—	247
Sub Nigel	25,359	879	—
Miscellaneous	22,091	1,309	—

GROUP PROFITS.

	March.	April.	May.
Central Mining	£265,826	£265,209	£271,519
Barnato	179,310	180,785	190,416
Gold Fields	2,359	*4,205	7,207
General Mining	24,237	25,289	27,394
Mines Selection	54,453	53,178	53,663
Union Corporation	69,416	71,792	75,341
Totals	£595,601	£596,253	£625,540



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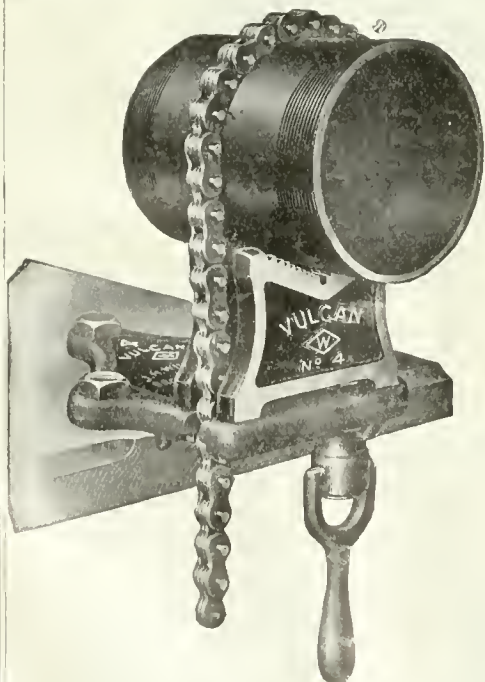
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THE MAY GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of May:—

Company	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
City Deep ...	A154	10	50,000	23,282	£27,487	28/ 5
Cons. Main Reef	220	6	50,230	17,829	8,587	26/ 4
Crown Mines ...	660	26	164,000	53,563	37,467	23/ 0
Durban Deep ...	100	3	24,100	8,354	*560	29/ 9
East Rand Prop.	110	19	110,000	33,268	6,079	24/ 8
Ferreira Deep ...	160	7	33,600	12,349	12,738	24/ 6
Goldenhuis Deep	300	7	49,500	13,741	1,135	22/ 10
Knight Central ...	120	3	22,500	6,254	*7,483	29/ 11
Modder B. ...	B104	8	55,000	28,365	62,002	20/ 10
New Modder ...	c236	15	84,500	42,307	92,153	20/ 3
Nourse Mines ...	180	5	40,900	13,233	2,582	25/ 10
Robinson ...	180	6	40,900	9,896	2,453	19/ 11
Rose Deep ...	300	7	51,500	15,160	14,257	19/ 2
Village Main Rf.	130	4	19,400	6,082	3,180	23/ 5
Wolluter ...	120	4	30,000	8,917	3,598	22/ 6
Village Deep ...	180	7	17,200	16,101	5,844	26/ 1

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a Includes 4 Nissen stamps. b Includes 24 Nissen stamps. c Includes 56 Nissen stamps.

* Loss.

Durban Roodepoort Deep, Ltd.—Low tonnage and abnormally high working costs.

Knight Central, Ltd.—See notice in Press, 3rd June, 1919.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of May of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared. Fine Ozs	Total Profit
Simmer and Jack ...	320	7	54,800	14,092	£6,728
Robinson Deep ...	140	10	52,200	17,261	9,521
Knights Deep ...	100	11	93,100	17,515	*3,014
Simmer Deep ...	220	10	43,700	10,013	*7,292
Jupiter ...	80	5	23,600	5,732	*2,985
Sub Nigel ...	30	2	10,300	5,970	4,279

Totals ... 1,190 45 277,700 70,583 £7,207

* Loss.

Reserve Gold.—Simmer and Jack, 300 fine ozs.; Sub Nigel, 2,910 fine ozs.; total, 3,210 fine ozs.

Union Corporation.

Results of operations on the producing mines of this group for the month of May:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	13,000	£66,014	30/ 8
Modder Deep Levels ...	70	14,200	92,941	12/ 0
Princess Estate ...	60	20,500	27,928	27/ 3
Totals ...	230	107,700	£186,883	—

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£44,803	20/ 10	£21,211	9/ 10
Modder Deep Levels ...	38,897	17/ 7	54,044	24/ 5
Princess Estate ...	27,842	27/ 2	86	0/ 1
Totals ...	£111,542	—	£75,341	—

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of May: Tons crushed, 3,885, yielding 1,677 fine ozs.; estimated value of month's output, £7,078; estimated profit for the month, £691. Reduced profit mainly due to abnormal expenditure.

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of May, 1919:—Central Mines: Tons crushed, 13,500, yielding 4,218 fine ozs. Elandsdrift Mine: Tons crushed, 1,370, yielding 1,049 fine ozs. Vaalhoek Mine: Tons crushed, 1,960, yielding 565 fine ozs. Estimated value of month's output, £24,596; estimated profit for the month, £3,391.

Witwatersrand Deep.

The following are the results of operations for the month of May, 1919: Tons milled, 31,600; grade, 5.342 dwts. per ton milled; working costs, £37,522, or 23s. 8.98d. per ton; working revenue, £35,543, or 22s. 5.95d. per ton; working loss, £1,979, or 1s. 3.03 per ton. The loss is due to a temporary fall in grade and heavy expenditure on shaft repairs. The re-timbering of the east shaft has now been completed to the 17th level. Development: Development footage, 362; footage sampled, 370; average width of reef, 31.1 ins.; average value, 15.9 dwts. Number of stamps running, 200; number of tube mills, 5; stamps running time, 23.205 days. Output in ounces: Mill, 6,095.645 ozs.; cyanide, 2,445.551 ozs.; total, 8,541.196 ozs.

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„ „ Explosives.

SAMPLES ON VIEW.

CORRESPONDENCE INVITED.

MANAGING DIRECTOR :

W. E. BLELOCH,
3, Transvaal Bank Buildings,
Fox Street,
JOHANNESBURG.

Box 5754.

Phone 1360 Central.

CORRESPONDENCE AND DISCUSSION.

Electric Hoists: A Query.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I shall be greatly obliged if you can put me in touch with the agent in South Africa for the Listerwood electric hoists. I am familiar with the A.E.G. and Siemens electric hoists which are in use on the mines of the Rand, but one of the above make has been sent here for me to erect, and as it is second-hand there is no diagram of connections, etc., which I may be able to obtain from the South African agent, as I presume there is one, although the hoist is American manufacture. Thanking you in anticipation.—Yours, etc.,

J. E. MACDONALD.

Eileen Alannah G.M.,
P.O. Eiffel Flats,
S. Rhodesia.

The Arrastra.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I observe that in your last issue a Barberton correspondent asks for information concerning the Arrastra. I regret that I am not at the moment able to give any precise figures as to "duty," and I do not quite understand Mr. Richardson's question as to the size of the "pan." The Arrastra has in the past been largely used in the treatment of gold and silver ores in Spanish America, and particularly so in Mexico. It is in fact still employed there at smaller properties, on a fairly large scale. It is a crude mill, having a vat in which roll one or more heavy broad flanged wheels, propelled by a horizontal beam which turns about a vertical axis. In its most primitive form the ore is dumped into a small "patio" or cobble-stoned circular courtyard enclosed by a stone wall and mixed with mercury. The horizontal beam is then propelled by a mule harnessed to the beam and driven around the circumference of the "patio." Sometimes a heavy stone takes the place of the heavy wheel. The Arrastra (or Arrastre, as the Mexicans term it) is used for crushing ore and also for amalgamation, and the duty depends of course on the friability of the ore and the size of the mill. It may be of interest to remark that the Golden Dove mine in Natal employed an Arrastra some years ago.—Yours, etc.,

SANTA GERTRUDIS.

Mint Price of Gold.

In the House of Commons last week, Mr. Macquinter (Coalition Unionist, Glasgow) suggested that the standard of the mint price of gold was arbitrarily fixed at an artificially low price, being at least a sovereign below the selling price to industries, and asked whether Mr. Chamberlain would approach the Allies to base the price fixed among them more nearly approximating to the real value and costs of production. Mr. Chamberlain, replying, said he thought the prices now being paid for the very limited supplies at present available in London for the arts in no way indicated what the price would be in a free market. He could imagine nothing more mischievous to our foreign trade than tampering with the standard of value. He declined to argue the point raised by Mr. Macquinter that an ordinary citizen should be prosecuted and imprisoned if he chose to sell a sovereign for 28s.

P.O. Box 3807.

ROCKWOOD PRESSED STEEL UNIONS

H. ALERS HANKEY - - - Sole Agent.

THE WEEK IN THE SHAREMARKET.

Continued Dullness—Restricted Business—Leeuwpoots, African Farms and Crown Diamonds Advance.

At the opening on Saturday Crown Diamonds were in fair demand with sales from 21s. 3d. to 21s. 7½d. Springs were done at 48s. 9d. Very little business was put through at the call without material change in prices. Randfonteins at 15s. 6d. buyers show a distinct improvement. A stagnant opening on Monday led to a dull and featureless call. The Modder stocks were all firm with Modder Easts better. Geduld and Springs easier and Government Areas and Van Ryn Deeps unchanged. Crown Diamonds were in demand at 22s. 6d. on Tuesday morning and went to 23s. at the call. African Farms and Leeuwpoots were higher, while Modder Easts weakened. At the opening on Wednesday Crown Diamonds were the main demand. One sale was made at 23s., but all the subsequent ones at 23s. 6d. Business was also done in National Banks at £15 5s. The call was a little more lively with advances in African Farms, Leeuwpoots, Crown Diamonds and Sub Nigels. The main stocks were unchanged. In the smaller values there was a demand for Coronation Freeholds. The market remained steady throughout the day though Crown Diamonds closed under their best. Alkalis improved to 15s. buyers. The early business on Thursday consisted of quotations only, except for a sale of Leeuwpoots at 24s. 6d. There was rather more work done at the call with little change in prices. Government Areas were a shade harder and City Deeps somewhat easier. The Modder stocks came unchanged. Crown Diamonds at 23s. 3d. were 3d. lower than at the close. Leeuwpoots and African Farms maintained their recent gains. The outside business during the past week has been very limited, and among the lot there is not for the present any favourite gambling counter. Sales: Sakalavas, 7s. 6d. and 7s.; Makganyenes, 30s. and odd lots at 35s. to 25s.; Henderson's Options, 10d.; Koodoos, 22s. 6d.; Phoenix, 1s. 1d.; Union Tins, 5s.; Monteleos, 13s. odd lots; South Westerns, 22s. 6d. pool shares. Buyers and sellers: New Farms, 1s. 6d. buyers; Compound Diamonds, 3s. 3d.—4s.; South-Westerns, 25s. buyer, for odd lots.

The market was firm at the call on Friday. The following alterations in prices took place:—Sales: African Farms, 15s.; Bushveld Tins, 1s. 6d.; Daggafonteins, 22s. 3d.; Crown Diamonds, 24s.; Geduld Props., 46s. 9d.; Pretoria Cement, 68s. 6d.; Van Ryn Deeps, 69s. 9d.; Charters, 21s. Buyers and sellers: City and Suburbans, 7s. buyers; Modder B., £7 17s. 6d.—£7 19s.; New Modders, £27—£27 10s.; Premier Preferred, £7 5s.—£7 10s.; Deferred, £7 10s. buyer; Swaziland Tins, 13s. 9d.—18s.; Alkali, 17s. 6d.—18s.

	Fri. 6th.	Sat. 7th.	Mon. 9th.	Tues. 10th.	Wed. 11th.	Thurs. 12th.
African Farms . . .	14 0*	14 0*	14 0*	14 3*	15 0	15 3
Anglo-Amer. Corp. .	23 0*	—	—	22 6*	22 6*	24 0*
Apex Mines	7 0*	7 2*	7 2*	7 3*	7 3*	7 3*
Bantjes Con. . . .	2 2*	2 3*	2 6*	2 3*	2 4*	2 4*
Brakpan Mines . .	64 0*	68 0*	64 0*	64 0*	64 0*	65 0*
Brick and Potteries .	—	—	4 0*	4 0*	4 0*	—
British South Africa	—	20 0*	21 0	20 9*	20 6*	20 6*
Bushveld Tins . . .	1 3*	1 6	1 8*	1 8*	1 8	1 6*
Cinderella Cons. . .	4 0*	4 3*	4 3*	4 3*	4 3*	—
City and Suburbans.	6 6*	6 6*	6 6*	6 6*	6 9	6 9
City Deeps	54 0*	54 0*	54 0*	54 0*	54 0*	53 0*
Clydesdale Collieries.	24 0*	24 0*	24 0*	24 0*	24 0*	24 0*
Con. Investments . .	27 0*	27 3*	26 6*	26 3*	—	26 3*
Con. Langlaagtes . .	17 6*	17 6*	17 9*	17 9*	17 6*	18 0*
Con. Main Reefs . .	9 6*	9 6*	10 0	10 0	9 9*	10 0
Con. Mines Selection	—	21 9*	21 6*	21 0*	21 3*	21 0*
Coronation Collieries	57 6*	57 6*	57 6*	57 6*	57 6*	57 6*
Coronation Freeholds.	1 10*	1 10*	1 10*	2 0*	2 3	2 1*

*Buyers. †Sellers. ‡Ex London. #Odd lots.

	Fri. 6th.	Sat. 7th.	Mon. 9th.	Tues. 10th.	Wed. 11th.	Thurs. 12th.
Coronation Syndicates	1 6*	—	—	—	—	2 6*
Crown Diamonds . .	21 0*	21 6*	21 6*	23 0	23 9	23 3
Crown Mines Deb. .	—	—	—	£100†	—	—
Daggafontein Mines .	22 0*	22 3*	22 3	22 3	22 3*	22 6*
Durban Road. Deeps.	—	—	—	—	6 0*	—
E.R. Coals	2 6*	2 6*	2 6*	2 6*	2 6*	2 6*
E.R. Deeps	0 10*	0 10*	0 10*	0 10*	0 10*	0 10*
E.R. Minings	17 0*	17 0*	17 0*	17 0*	17 0*	17 0*
E.R. Proprietary . .	5 0*	5 9	5 9*	6 0	6 0*	6 3†
E.R. Debentures . .	£62*	£62*	£62*	£62*	—	£62*
Eastern Golds . . .	1 5†	1 0*	1 0*	1 0*	1 2	1 0*
Frank Smith Dmds.	4 5*	4 5*	4 7	4 8	4 8*	4 9
Geduld Proprietary .	46 6	46 3*	46 6*	46 3*	46 3*	45 0*
Ginsbergs	—	1 6*	—	1 3*	—	1 6*
Glencairns	—	—	1 0*	1 0*	1 0*	1 0*
Glyn's Lydenburgs .	—	—	—	17 0*	—	—
Govt. Areas	94 0	93 9	93 9	93 0	93 0*	93 9
Hume Pipes	—	25 0*	—	22 6*	—	24 0*
Jhb. Bd. of Executs	30 0*	—	30 0*	30 0*	30 0*	—
Jupiters	—	—	3 0*	3 0*	3 9†	2 3*
Klerksdorp Props. .	1 1*	—	1 1*	1 1*	—	1 2*
Knight Centrals . .	6 7*	6 5*	6 6*	6 5*	6 3*	6 2*
Knights Deeps . . .	—	—	—	—	5 0*	—
Lace Props.	18 0*	18 0	—	17 9*	18 0	17 6
Leeuwpoot Tins . . .	22 9*	22 9*	22 9*	23 3	23 9	24 6
Luipaardsvlei Est. .	2 0*	2 6*	2 6*	3 0*	3 0*	3 0*
Lydenburg Farms . .	8 9†	8 6*	—	8 6*	8 6*	8 6
Middelvlei Est. . .	1 0*	1 0*	1 0*	1 1*	1 1†	1 0*
Modder B's	160 0*	160 0*	160 0*	160 0*	160 0*	161 3
Modder Deeps	157 6†	160 0†	156 0*	156 0*	156 3*	156 3*
Modder Easts	19 9	19 9*	20 6	20 1*	20 0	20 3
Do. Opts. (3 yrs.) .	3 1†	3 0	3 4	3 4*	3 5	3 4
Do. Opts. (4 yrs.) .	4 9*	4 9*	4 10*	4 10*	4 11*	5 0*
Natal Navig. Colls.	—	22 0*	—	—	22 6*	22 0*
National Banks . . .	305 0†	305 0†	305 0†	305 0†	305 0†	305 0†
New Boksburgs . . .	1 5*	—	1 9†	1 5*	1 5*	1 5
New Eland Diamonds	28 6†	—	—	—	24 6*	26 6†
New Era Cons. . . .	9 9*	10 0	10 3	10 0*	10 0*	10 0*
New Geduld Deeps .	4 6*	—	4 10*	5 0	5 0	4 10*
New Heriots	—	—	—	10 6	—	—
New Kleinfonteins .	9 3	9 3	8 10*	9 0a	9 0*	9 0*
New Modders	—	£27a	—	—	£26½*	£26½*
New Unifeds	4 0†	4 0†	4 0†	4 0†	4 0†	4 0†
Nigels	4 0*	5 0*	5 0*	5 0*	—	5 0*
Nourse Mines	—	—	—	—	—	12 6†
Premier Deferreds .	—	—	140 0*	140 0*	150 0*	—
Premier Preferreds .	155 0†	—	155 0†	155 0†	155 0†	142 6*
Pretoria Cements . .	68 0	—	66 0*	67 6	67 6†	68 0
Princess Estates . .	2 0*	2 3*	2 3*	2 3*	2 3	2 5
Rand Collieries . . .	3 3*	3 0*	3 0*	3 0*	3 0*	3 0*
Rand Mines	65 0†	65 0†	65 0†	65 0†	65 0†	—
Rand Nucleus	1 4*	—	1 5*	1 5*	1 4*	1 5*
Rand Select Corp. .	—	—	—	—	75 0*	78 0†
Randfontein Deeps .	4 9†	4 6*	4 9†	4 9†	4 6	4 5*
Randfontein Est. . .	14 9	15 6*	15 0*	16 0†	16 0†	16 0†
Roberts Victors . . .	11 0*	12 0*	—	12 0*	12 0*	12 0*
Rooibergs	4 1*	4 1*	4 0*	4 1*	4 0*	4 0*
Rooipoort Uniteds .	—	—	—	—	2 0*	1 9*
Ryan Nigels	3 5*	3 3*	3 3*	3 3*	3 3*	3 3*
Shebas	1 6*	1 6*	1 6*	1 6*	1 6*	—
Simmer Deeps	1 0*	—	—	—	—	1 6†
S.A. Breweries	—	—	35 0†	35 0†	35 0†	35 0†
S.A. Lands	5 9*	5 10*	5 9*	5 9*	—	5 10
Springs Mines	49 0	48 9	48 3	48 6	48 3*	48 0*
Sub Nigels	18 6*	18 6*	18 6*	18 6*	19 9	19 6*
Swaziland Tins . . .	19 0†	19 0†	19 0†	19 0†	—	19 0†
Trans. G.M. Est. . .	14 0†	13 3*	13 3*	13 3*	13 3*	13 3*
Van Ryn Deeps . . .	70 0	70 0†	70 0	70 0†	70 0b	69 6
Van Dyks	—	—	2 3*	2 3*	2 3*	2 6†
Village Deeps	—	13 6†	—	12 0*	12 0*	—
West Rand Cons. . .	—	—	—	—	—	2 6*
Witwatersands . . .	—	—	—	16 0*	—	16 6*
Wit. Deeps	13 6	—	—	—	12 6	—
Woluhuters	2 3*	2 6†	2 3*	2 3*	2 3	2 0
Zaaiplaats Tins . . .	9 5	9 4*	9 3*	9 6	9 6*	9 9
New State Areas . .	24 0*	24 0*	24 6	24 3*	24 9	24 3
South Van Ryns . . .	8 10*	8 9*	8 9*	8 9*	8 9*	8 9*
S.A. Alkali	12 9*	—	—	13 0a	12 6*	15 0*
Tweefontein Colls. .	23 6*	25 0†	—	22 9*	22 9*	25 0†
Do. Preference . . .	23 0*	23 0*	23 0*	23 0*	23 0*	—
West Springs	23 6	22 9	22 6*	22 3*	22 6*	22 6
Do. Options	6 4*	—	—	—	—	—
Union 5 per Cent. : 6th, £102½; 7th, £103; 9th, £103; 10th, £103; 11th, £102 12s. 6d; 12th, £102 17s. 6d.						

*Buyers. †Sellers. ‡Ex London. #Odd lots.

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Grade.	Material.	Microhms per Cubic c.m.	Ohms per Square Mil. Foot.
CHRONIC ..	NICKEL CHROME ..	93.5	441.7
FERROZOID ..	NI-STEEL ..	84	397
FERRY ..	COPPER-NICKEL ..	47.2	223
TARNAC ..	CUPRO-MANGANESE	41	193.7
B.B. ..	30% GERMAN SILVER	40.2	189.9
ZODIAC ..	SPECIAL GERMAN SILVER	36	170
No. 1 ..	NICKEL SILVER ..	29	137
No. 3 ..	NICKEL SILVER ..	23.5	111
No. 4 ..	NICKEL SILVER ..	21	99.2
No. 5 ..	NICKEL SILVER ..	18	85
NICKEL ..	PURE NICKEL ..	9.6	45.3
CUPRO ..	COPPER-NICKEL ..	26.4	12.5
COPPER ..		1.561	7.38

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Scare Along the Reef—Increased Production Essential—A Little Sensation—Iron and Steel—Timber and Building Materials—Bricks—Electrical Goods—Explosives—Within the Law—Oils, Colours and Glass—Scraps of News.

An experienced Reef traveller states that there is a scare amongst the mines in reference to the anticipation of several of the lower-grade mines being closed down, and to make matters worse, so far as he is concerned, he cannot visit a mine without permission from a recognised buyer in town to introduce *new* business. He attributes this regulation to the fact that large quantities of old orders have recently arrived from overseas. Another reason is that, as a visitor along the Reef, he feels that there is something very real in regard to the danger of some of the mines closing down. If such an unfortunate event happens, it is self-evident that certainly the consumable stores and machinery spares will be distributed to the producing mines; hence the quandary in which the mining people are placed. It is as well to mention that representatives of merchants may visit a mine to ascertain if orders already placed have been correctly delivered. The public are very critical as to the apathy of the Government, more especially in connection with the recruiting of more natives. Another point is that here we are on the eve of the prorogation of the Parliamentary session and yet practically all we have is that the Acting Premier hopes that the mines will be closed down gradually with as much interval as possible. Of course we have the promised triangular Commission of three Government members, three members of the Labour Party, and three from the mines, and we all know what Commissions are. Last week it was reported that there was a betterment on the Commercial Exchange, but all this has disappeared as the days progress without any encouraging news from Capetown, excepting that a million and three-quarters has to be paid in the coming year under the new phthisis legislation. This weary waiting undoubtedly has further darkened the heavy cloud already hanging over Johannesburg and the Reef mining material community. It has also extended itself throughout all commercial circles, and the apathy shown is extraordinary seeing the possibilities, nay probabilities, to the trading community and workmen if things are allowed to take their course.

INCREASED PRODUCTION.

Several great authorities state that the world must have increased production in all affairs of life to again balance the ledger. Wages can be raised temporarily by legislation or by the shock tactics of special groups of men whose services for the moment are essential. But no individual or company can be forced to employ people at a loss, and there is evident danger of unemployment on a large scale if workmen put too high a value on their services. It has been shown that unless new income is created there is no fund from which unemployment on a large scale can be subsidised, and there is little reason to think that a State could furnish productive work at the higher wages without a loss when competitive employers failed to do so. There remains the hope of increased production. There is a great risk of disappointment and failure if there is an attempt to grasp the fruits of progress before the tree that might produce them has been cultivated. It must be remembered that the wealth of the world, however divided, was insufficient before the war for a general high standard, and there is nothing as yet to show that it will be greater in future. Hence the

most important task—more important immediately than the improvement of the division of the product—incumbent on employers and workmen alike, is to increase the national product and that without sacrificing leisure and the amenities of life. In other words there was not enough to go round to make people happy before the war, and unless the world produces more and more by increased efficiency, by better machinery and a more reliable distribution we cannot hope to attain the happiness of the many so often spoken about. These improvements, however, will be attained by industry, skill and patience, but obviously this will take time to accomplish, whether it be in our mining industry, our ranches, agriculture or manufactures.

A BIT OF A SENSATION.

Local gossip, both on the Exchange and the merchants' offices, is that a prominent buyer of one of the groups is about to sever his connection with his old employers and join a leading mining material house. A call was made on the firm in question, who declined to give any particulars beyond the remark that there was something in it.

IRON AND STEEL.

Transvaal iron and steel are being sold in Johannesburg at 30s. and 35s. respectively, which are the merchants' prices, but it is not certain if they exactly agree with the factories'. These reductions have undoubtedly been caused through the imported iron having been decreased to 35s. and 40s. per 100 lbs., according to sizes. As regards the local iron, it is understood that the factories hope to get a trial order from the Government for iron telegraph poles, which is encouraging, as it illustrates the progress already made by our own iron industries. There has been considerable depression in imported bar iron and steel, piping, wire nails and steel pipes, simply because America and also Canada more particularly are said to have been sending out big consignments to be sold here on commission. It is stated that the American selling price is 10 per cent. lower than

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that of England, and Canada is approximately $7\frac{1}{2}$ per cent. lower than America. As a proof of this the price of Canadian steel plates for forward delivery is £35 per ton, as compared with £40 to £50 for local stocks. Barbed and plain wire is 42s. 6d. per 100 lbs., but with a scarcity of both as the agriculturists have been spending freely for fencing purposes. Black baling wire has dropped to 35s., as this is the off season. It is extraordinary what a big trade Johannesburg is doing in connection with local Transvaal and mild steel.

TIMBER AND BUILDING MATERIALS.

There is a satisfactory advance in Baltic timber, as deals are 1s. 6d. to 1s. 7d. a foot; floorings, 8 $\frac{1}{2}$ d.; and ceilings, 6d. to 6 $\frac{1}{2}$ d. The word satisfactory is used because the legitimate timber dealers are coming into their own again, as the speculative stocks sent out just before the armistice have now been practically absorbed. It must be mentioned that even the before-mentioned prices are mostly at a loss, because present stocks were purchased in Sweden at the highest rates ruling during the war period. In addition to the speculative element being practically out of the business, we have been using quantities of timber since the strike was over, which is another reason why prices have fractionally advanced, and an additional reason is that inquiries have been made from Kimberley, Bloemfontein and other large centres, because values at Durban had firmed up and the places mentioned thought they might get a cheaper turn at Johannesburg. It may be mentioned that a Bloemfontein housing scheme has been adopted by the Town Council there, who have accepted a tender for building 60 workmen's houses at £25,974. The second-hand building material trade seems pretty much at a standstill on account of present stocks being absorbed, and there does not seem over much prospect of securing other supplies. One or two dealers are casting longing eyes over the poorer-grade mines that are likely to close down, reminding one of vultures hovering over a carcase. There has been an excellent demand for composition roofing and damp courses, 1 ply, 40s.; 2 ply, 45s.; 3 ply, 55s.

Bricks.—Prices remain the same as last week, and there is nothing fresh to report except that the scarcity of plasterers, carpenters and painters has, if anything, been more emphasised during the past week, which prevents contractors doing as much as they would like. There is plenty of work on hand, but owing to the shortage of men things are not at all over-brisk at present.

ELECTRICAL GOODS.

There is not much alteration to report during the week in this market. Tubing still remains very scarce indeed in town, although it is said that considerable consignments have arrived from overseas at the coast, whence great difficulty is being experienced in getting them entrained for the Transvaal. However, a period must now shortly be put to the present dearth of stocks. Wiring, on the other hand, is plentiful and slightly lower in price. Country business is very good indeed with Kimberley, East London and other coast towns, as well as Springs, Ermelo, etc., in the Union. Contractors have not been able to do much, in spite of the numerous buildings now being erected, in consequence of the before-mentioned lack of tubing. Business can best be described as patchy, and it is thought that it cannot well remain much longer in the doldrums.

EXPLOSIVES.

The B. Explosives Company are running off their stocks, and it is hoped that by the time it will become necessary to purchase materials again prices will have fallen, in freights especially; in fact, a few supplies bought lately near Chili have been obtained at a slightly lower rate than those previously bought, but freights remain unaltered. It is expected that the high-priced explosives will be pretty well worked off by the end of the present year, after which an improvement in prices may be looked forward to.

OILS, COLOURS AND GLASS.

The normal price for linseed oil is 10s. to 10s. 6d. per gallon, but the tender price on the Commercial Exchange is nearer 8s. raw and 8s. 6d. for boiled. The shops quote for boiled oil, 12s. 6d. per 7 lb. tin and 50s. per 4 Imperial gallons; small bottles, 2s. each—raw much the same; white lead, Pacific or White Seal brands, 75s. per 100 lb. kegs; English genuine, 6 $\frac{1}{2}$ lbs., 6s. 3d.; 12 $\frac{1}{2}$ lbs., 12s. 6d.; 25 lbs., 25s.; and 50 lbs., 45s.; genuine dry, 1s. lb.; ordinary white lead, 70s. per 100 lbs., and even less merchant to merchant; genuine spirits of turpentine, 65s. per case of 2-4's; 72s. 6d. 10-1's; single tins, 7s. 6d. old measure gallon; small bottles, 1s. 9d.; turpentine substitute, 45s. per case of ten tins, each gallon old measure; finest English putty, 9d. per lb. in bladders, 7 $\frac{1}{2}$ d. lb. in bulk; others down to 5 $\frac{1}{2}$ d. per lb.; red oxide, in oil, 65s. per 100 lbs.; 25 lb. keg, 18s. 6d.; 12 $\frac{1}{2}$ lbs., 10s.; and 6 $\frac{1}{2}$ lbs., 5s. 6d.; monolith dry red oxide, 16s. per 100 lb. box; ordinary colours, ground in oils, 1s. 3d. per lb.; 25 lbs., 25s.; 50 lbs., 45s.; mediums, 2s. 6d. per lb.; and specials up to 4s. 6d. per lb.; dry colours, ordinary, 6d., 9d. and 1s. per lb.; colours ground in turpentine, ordinary, 2s. 6d. per lb.; others up to 4s. 6d. per lb.; motor colours, ground in gold size, 2s. 6d. to 4s. 6d. per lb. All wallpapers reduced 6d. per roll as from June 1st, which corresponds with the reduction in Britain. Plate glass, 6s. 6d. per sq. ft. average size; mirrors, plate, 8s. sq. ft. Very busy with old orders. Stocks are quite fair, but nothing much more expected until end of year. Sheet glass, 16 oz., 7 x 9, 222 sheets in case, 95s., or 6d. per sheet; 10 x 12, 120 sheets, 100s., 1s. per sheet; 16 x 16, 64 sheets, 100s., 2s. per sheet; glazier's hammer, 2s. 6d.; corner wheel, 1s. 6d.; best diamonds, No. 0, 11s. 6d.; 1, 15s.; 4, 31s.; special diamond for plate glass, 60s.; wheel glass cutter, 2s. 6d.; pliers, 2s. 6d. to 5s.; sprigging machine, 15s. and 17s. 6d. each; laths, 2 ft. 2s., 5 ft. 6s.; T squares, 2 ft. 3s., 4 ft. 5s. There are intermediate sizes.

SCRAPS OF NEWS.

Proposed alterations in the Income Tax Bill: exemptions for children from 16 to 18 years of age; sick insurance excepted; married women entitled to make income tax returns separately from their husbands, and so forth. Better cable service is in evidence, as the British Government has suspended its priority, excepting for really urgent cables. When it was admitted that telegrams took ten to twelve days from London to Australia, the admission was greeted with laughter in the British House of Commons. The Germiston Chamber of Commerce is waking up, as Mr. C. D. Leslie, the consulting engineer to the Consolidated Gold Fields had an interview with that body regarding the low-grade mines. A great rush is expected to attend the proclamation of what is called the Moseberg alluvial diamond diggings between Schmidts Drift and Delpot's Hope in the Kimberley district.

PERSONAL.

Mr. Maurice Brown, who has worked up a substantial business in the iron trade and is well known in commercial circles here, left by last Monday's train for Capetown, and was seen off by a large number of friends. He intends visiting some of the British iron industries. He will also visit Italy, and thence on to America, where he also wishes to become acquainted with the manufacturers he has had dealings with. Mr. Maurice Brown is combining a health trip with his business journeyings. His brother has been left in charge to manage the business.

WANTED.—Good Second-hand Morris Slimes Pump, 3in. or 4in.; and good Second-hand 2in. or 3in. Tangye Centrifugal Solution Pump.

Details to "PUMPS," c/o Mining Journal,
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PERSONAL.

Mr. E. Birkenruth has left for Rhodesia and the Congo, not England, as stated in our last issue.

It is stated that no less than seventeen representatives of American firms arrived at Capetown by the last boat from New York. British manufacturers please note.

Mr. F. R. Lynch, the Managing Director of the Consolidated Mines Selection Company, Ltd., accompanied by his family, left last week *en route* for England, per the Balmoral Castle, on six months' leave of absence.

Mr. James M. Holman, head of the famous firm of Holman Brothers, Ltd., Camborne, has left the Rand to continue his business travels, and, as was stated at the East Pool meeting recently, is likely to return home with his pocket full of those orders which his establishment can so well execute. He is accompanied by his son, Mr. Leonard Holman, who takes a very active interest in the business. Before returning to England the Messrs. Holman will make almost a tour of the business world, and we hope that their utmost expectations in regard to it may be realised.

With the deepest regret we have to record the death on Friday, 6th inst., of Mr. E. A. Barkby, general manager of Messrs. Hadfields, Ltd., Johannesburg. Deceased came to this country just before the outbreak of war to open the Johannesburg office of his firm. He was the senior member of the staff of Hadfields, Ltd., having just completed 33 years' service, and was previous to coming to South Africa assistant works manager at Sheffield. During his stay in Johannesburg he had made a host of friends both in town and along the Reef. In the early stages of the East African campaign he took an active interest in helping to organise the Mechanical Transport, and in spite of ill-health spared

neither energy nor time. He was a member of the Institution of Mechanical Engineers (Eng.). Before the war, as assistant works manager at Sheffield, he had considerable experience with Admiralty contracts, which stood him in good stead in his subsequent service to the Union Defence Department. Among those present at the funeral, which took place on Sunday afternoon at the New Cemetery, were Senator S. Marks, Major Snow, Capt. T. E. Ridley, and Messrs. E. Farrar, H. L. Lavenstein, A. H. Bulloch, H. H. Jordan, W. A. Morrison-Abel, W. A. Tester, J. A. Frerichs, G. Holgate, W. H. Ferrar, J. McCracken, R. Hosken, J. Chapman, J. A. Vaughan, H. Reynolds, Wm. Moses, A. E. du Pasquier, H. H. Miles, H. W. Blanchard, H. C. Wickens, G. Chisholm, W. Shaw, E. Diver, and Kenneth Austin. The ceremony at the graveside was conducted by the Revs. E. Dunstan and A. A. Kidwell. Wreaths were sent by his brothers overseas, Sir Robert Hadfield, Bart., Directors, Messrs. Hadfields, Ltd., Sheffield, Staff, Messrs. Hadfields, Ltd., Johannesburg, Messrs. Thos. Barlow & Sons, Durban, Mr. and Mrs. W. H. Ferrar, Mr. and Mrs. G. Holgate, Mr. J. Pullar, Mr. F. Euting, Messrs. P. Peech & Co., Salisbury, and others. The pallbearers were Mr. J. A. Frerichs, Capt. T. E. Ridley, Mr. H. H. Jordan, Mr. J. Chapman, Mr. W. H. Tester, and Mr. H. L. Lavenstein.

Prospecting in Mozambique.

The Anglo-Portuguese East Africa Concessions, Ltd., a London company, is actively starting mining prospecting in Mozambique. The prospecting concession covers the whole of the territory south of the Lourenco Marques-Transvaal railway, being roughly four thousand square miles in extent. The leader of the expedition is a Rhodesian pioneer and expert prospector named Atherton, who is accompanied by two other prospectors. They are commencing somewhere near the Zululand border.

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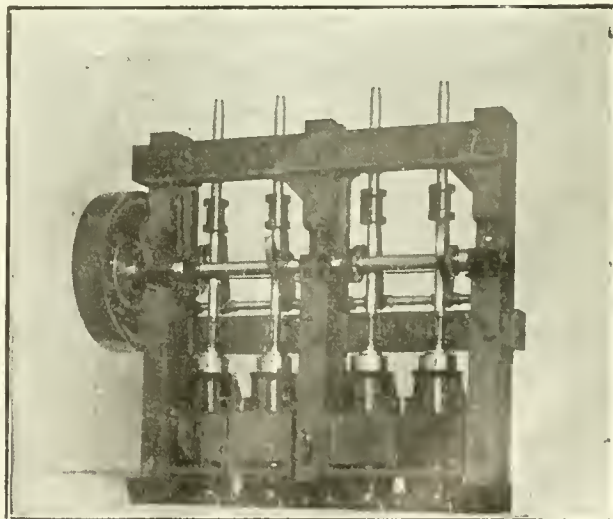
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Company Meetings.

STANDARD BANK OF SOUTH AFRICA.

Lord Sydenham presided at the annual general meeting of the Standard Bank of South Africa, Ltd., on 30th April, in London, and in moving the adoption of the report said:—

The balance-sheet before you shows a remarkable expansion in the figures under almost every heading, resulting in an increase of over 21 per cent. in the total as compared with the balance-sheet a year ago.

PROFIT AND LOSS ACCOUNT.

Turning to the profit and loss account you will see that the net profits for the year amounted to £540,357, which, with the £204,333 brought forward from 1917, gives us £744,690 to dispose of. Of this sum, £108,396 was paid as an interim dividend at the rate of 14 per cent. per annum. The directors have considered it prudent to add £200,000 to the reserve fund and apply £50,000 to the writing down of bank premises, and this leaves us a balance of £386,293 to deal with. The directors recommend that this sum be disposed of as follows:—£108,397 in paying a final dividend at the rate of 14 per cent. per annum; £38,713 in paying a bonus of 2s. 6d. per share, making a total distribution for the year of 16½ per cent.; £40,000 to officers' pension fund, leaving a balance of £199,183 to be carried forward.

BRANCH EXTENSION.

Since our last meeting we have opened branches or agencies of the bank at French Hoek, in the Cape Province; Nelspruit, in the Transvaal; Lusaka, in Rhodesia; Limbe and Zomba, in Nyasa-

land; and Elisabethville, in the Belgian Congo. An agency has recently been established in Rotterdam, and we are just completing arrangements to open an office in Amsterdam.

We have been appointed at Rotterdam as official consignees to the War Trade Department of shipments to places in the occupied territory in Germany, in Belgium, Alsace-Lorraine, and Switzerland, and we recently handled, on behalf of the British authorities, the shipment of £5,000,000 German gold sent through Holland in payment for foodstuffs supplied to Germany.

We recently opened a branch of the bank at No. 17, Northumberland Avenue, adjoining the Royal Colonial Institute, and I am sure that this will be of great convenience to visitors from South Africa staying in the West-end of London.

SOUTH AFRICAN TRADE.

A considerable increase has taken place in the trade of South Africa, the exports from the Union and Rhodesia of South African produce and manufactures for 1918 being £33,727,838, as compared with £30,020,996 for the previous year, being an increase of about 12½ per cent., principally in diamonds, mohair, coal and wool. These figures are, of course, exclusive of native gold. Imports of merchandise into the Union of South Africa and Rhodesia during 1918 were £51,071,179, compared with £40,331,709 for 1917, an increase of 26.6 per cent. This increase was chiefly in cotton goods and wearing apparel, and is, of course, partly accounted for by the higher average of prices ruling.

Towards the end of last year South Africa was swept by a malignant form of influenza, and I deeply regret that no less than 23 members of the staff of the bank in South Africa died from influenza during the epidemic.

ARMISTICE.

The signing of the armistice between the Allies and the Central Powers immediately followed the epidemic, and for a time there was some fear that the sudden cessation of hostilities would have a demoralising effect on prices, and create serious embarrassment in trade circles. On the whole, however, prices have remained steady, since it was realised that a lower level of values was not expected in Great Britain for some considerable time.

The Chairman, after referring briefly to the progress made by the chief agricultural and mining industries in South Africa, said:—

PROSPECTS.

It must be remembered that the world is now in the transition stage from war to peace, and until the effects of changes—which must be felt in South Africa, as elsewhere—become known, it is impossible to predict the conditions of trade with any certainty, but in spite of difficulties which at the present time affect gold mining, the general prospects of South African trade and industries hold out hopes for the future.

The rich resources of the country are being more and more turned to account, and improved methods are making way.

Sir David Barbour seconded the motion.

The Hon. H. L. Currey, of Capetown, congratulated the chairman on the report.

At an extraordinary general meeting subsequently held resolutions were approved for increasing the capital of the bank to £10,000,000, and for the establishment of a Colonial Share Register. The latter step should add to the popularity of the shares in South Africa.

Rathenau on Communism.

Writing in the *Times* on the attitude of the Germans in Berlin to-day, "Viator" says:—"Such men as Hugo Rathenau, the coal magnate, also Dr. Walter Rathenau, of the A.E.G., have already offered their establishments to the communists on the promise of personal immunity for themselves and families. These men argue that after a few months of Communism they will be called back to take charge as the only men capable of managing affairs, and that they will come back on their own terms."

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employ-

The Employment Question. ment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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Notes and News.

A New Vryheid Coal Venture.

We understand that Mr. J. Andrew Cohen has taken up the farm Rustplaats adjoining the Natal Ammonium property in the Vryheid district. The same seam of coal, running three to five feet wide, of high calorific value and nitrogen content, transverses the farm, and the intention is to exploit it for its by-products.

* * * *

Makganyene Diamonds.

The Makganyene Diamond Syndicate is now engaged in washing blue ground from a depth of between 90 and 100 feet. Two pans are engaged on this work, and results are said to be satisfactory. Operations in connection with proving the size of the mine are proceeding.

* * * *

Hammer Drills.

A valuable contribution to the discussion on Mr. Potter's paper on "Hammer Drills" was made by Mr. Veasy at the meeting of the South African Institution of Engineers on Wednesday night. Mr. Veasy recounted the history of hammer drills on the Rand, going back to the first stope drill contest promoted by this paper, and made a number of valuable constructive suggestions. We hope to print Mr. Veasy's contribution in an early issue.

* * * *

S.A.I. of Engineers: Annual Meeting.

The annual meeting of the South African Institution of Engineers, held on Wednesday night, was of unusual interest and importance. Mr. Elsdon Dew was installed President in the place of Mr. C. D. Leslie, who delivered his valedictory address. The address dealt with the coming closing down of the low grade mines, and we hope to reprint it in our next issue. Mr. Leslie emphasised the fact that the Government was not the sole culprit in causing the present plight of the industry. The "slowing down" of effort on the part of the employees was also a large factor. It is clear also from what Mr. Leslie says that if the towns along the Reef are to escape blame for a lack of sympathy and understanding they must bestir themselves to make their voices heard on behalf of the low grade mines.

* * * *

Mr. J. J. Boyes on the Colour Bar.

The report of Mr. J. J. Boyes, the Commissioner appointed to hold an inquiry regarding the alleged ill-treatment of natives by members of the Police Force during the recent native unrest in Johannesburg, has the following significant passage: "It appears to me that the bed rock of the trouble and the native unrest at Johannesburg is the 'colour bar' question, the opposition to the existing pass laws, and their administration is in my opinion only an incident and a phase of that great, difficult and complicated question. Some of the natives, rightly or wrongly, are violently opposed to the existing pass laws and the manner in which the laws are administered, and all the alleged ill-treatment of the natives has arisen in consequence of the arrest of natives (men and women) for not complying, or inciting others not to comply, with these laws. The violent opposition of the natives to the pass laws being the immediate cause of all the trouble, it does appear to me that it would be wise if the Government decides either to enforce the existing laws dealing with passes very strictly, or, if the Government consider that a *prima facie* case has been made out, for an investigation of the existing laws and their administration, to appoint at once a commission consisting of at least three men, to go into the question of the existing pass laws and the administration of these laws. If such a commission is appointed, I think that the natives ought to have a representative on that commission. It does seem to me that it would be dangerous to allow this important question to drift: feeling amongst a large section of the natives seem to be very intense; they are in an excited state of mind, and seem determined to resist the carrying out of the existing pass laws."

The Mines Commission.

The *personnel* of the Mining Commission, as announced by the Acting Prime Minister in the Assembly this week, includes the Government Mining Engineer, Sir Robert Kotzé; the President of the Chamber of Mines, Sir Evelyn Wallers; the Joint Secretary and Actuary of the Chamber of Mines, Mr. W. Gemmill; Mr. J. J. van der Horst, M.L.A. for Wolmaransstad, who was a member of the Phthisis Commission; Mr. A. Crawford, general secretary of the Federation of Trades; Mr. Forrester Brown, general secretary of the Mine Workers' Union; and Mr. Pohl, district secretary, Springs Mine Workers' Union. Mr. Malan indicated that two Government officials would be appointed, and that a representative of general industries would be included. It is not quite clear whether Mr. J. J. van der Horst is chosen as a representative of the industry. His direct acquaintance with it is certainly not great.

* * * *

Dundee Coal.

The report of the Dundee Coal Company to December 31 last states that during the year a further £20,000 for redemption has been paid to trustees for debenture holders, and the amount they now have in hand is £80,616. This amount, together with interest, will be sufficient to pay at due date the whole debenture issue of £83,075. The output from the company's mines during 1918 was 336,537 tons, a decrease of 33,375 tons as compared with the preceding year. The sale of the whole output was effected in South Africa at satisfactory prices. The coke output was 8,288 long tons. A ready market was found for all the coke made, at prices fully justifying the expenditure incurred in erecting the ovens. After payment of debenture interest, £4,984, dividends (Nos. 35 and 36), £30,700, and providing £20,898 for depreciation and £9,160 for income and excess profits taxes, £40,000 has been transferred to reserve, leaving £19,768 to be carried forward.

* * * *

New Industries and the Labour Market.

The labour returns for May issued this week show that in Johannesburg 417 applications were made for employment, an increase of 229 on the previous month. The estimated total value of plans passed by the seven principal municipalities amounted to £129,653, as compared with £122,185 for the previous month. Tenders accepted by the Government amounted to £137,429 5s. 2d., as against £38,374 6s., showing an increase of £99,054 19s. 2d. The report states that there was no demand for clerical assistance. A fair amount of work was offered. Places can always be found for skilled workers. The report indicates that the painting colour manufacture and cement modelling trades are very busy. A factory for the manufacture of plaster-of-paris is starting at Meyerton soon. The factory will also make tiles, cement and concrete work for farming purposes, and they expect to do good business. Stone dressing is very busy, using local material entirely. A commencement has been made with utilising marble from South-West Africa. This marble comes in blocks to Kempton Park, where it is cut up in slabs and polished. The opinion of the trade appears to be that this marble is as good if not better than any which has previously been imported.

* * * *

The Globe and Phoenix Reef Case.

The action brought by the Amalgamated Properties of Rhodesia against the Globe and Phoenix Gold Mining Company for breach of contract in connection with the sale by the former to the latter of the John Bull claims, after having been fought from Court to Court, and in each case decided against the appellant company, was finally terminated in the House of Lords, in mail week, when judgment was given for Globe and Phoenix with costs. At one time, it was currently believed that the whole matter, which has entailed an expenditure running into six figures, might have been settled for a few thousand pounds. The question at issue was fought chiefly upon what, in Rhodesian mining law, is meant by "extra-lateral rights," and it was mainly upon this that Globe and Phoenix won. The trial, on the first hearing, lasted for 145 days, and, during its progress, more than one of the counsel engaged was almost compelled to throw it up from sheer exhaustion. Mr. Upjohn (leading counsel for Globe and Phoenix) nearly lost his voice, and, during the progress of the case, there were verbal fights between counsel engaged, which were much to be regretted. The case came before Mr. Justice Eve in October, 1915, and his judgment was not delivered until December, 1916. That judgment, as already stated, was against Amalgamated Properties. In the Court of Appeal, Amalgamated Properties was again defeated, and the last scene of all, a few days ago, witnessed its final defeat. Whilst Globe and Phoenix is to be congratulated on its victory, Amalgamated Properties of Rhodesia (now called Rhodesia Exploration, Ltd.), is almost equally to be congratulated on having an obstacle cleared out of its way, which was hindering its progress at very turn.

* * * *

The Late J. P. Johnson.

We gladly print the following appreciation of the late Mr. J. P. Johnson, formerly of the staff of this paper. Mr. Johnson had abandoned mining for farming in Tasmania, but recently returned to a position on the E.R.P.M. Mr. Johnson was born in London in 1881, and was educated at Dulwich College and the Royal School of Mines, where he took honours in Advanced Mining and Geology and was King's prizeman in Practical Metallurgy in 1901. After practical experience in Doleath and Tincroft Mines, Cornwall, he came to South Africa in 1903, his qualifications securing him a good position in Jumpers Deep Mine, and subsequently in the Saxon group of mines. Later he was engaged in surveying the Roberts Victor Diamond Mine and in prospecting certain areas in Orange River Colony for the Vindex Diamond Syndicate, eventually establishing himself in Johannesburg as a consulting mining engineer and geological expert. He came to be an authority on diamondiferous propositions, and his services being eagerly sought for by prospecting syndicates, he was frequently engaged to accompany expeditions in various parts of the interior, north of the Transvaal, in Griqualand West, and elsewhere. His mining experiences were published in a series of monographs, "The Auriferous Conglomerates of Witwatersrand," "The Antimony Deposits of the Murchison Range," "The Geology of Roberts Victor Diamond Mine," whilst his books on "The Ore Deposits of South Africa," two vols., 1909, and "The Mineral Industry of Rhodesia," 1911, are standard works. It may be mentioned that he spent a considerable time in Rhodesia; he had visited all the mines—except one—described in the last-named book, and was convinced of the great mineral richness of the country. He was on the Council of the Geological Society of South Africa, and was appointed by the Government member of a Commission to examine and report upon the relics of ancient native art, known as Bushmen Rock Paintings and Petroglyphs. Besides contributing to the English scientific journals and to the *South African Mining Journal*, he found time to write the results of his travels and scientific studies in a series of books, "The Stone Implements of South Africa," 1907, 2nd edition, 1908; "Geological and Archaeological Notes on Orangia," 1910; "The Prehistoric Period in South Africa," 1910, 2nd edition, 1912.

* * * *

S.A. Institute of Electrical Engineers.

At the meeting of the South African Institute of Electrical Engineers on Thursday night, Mr. A. E. du Pasquier, the new President, delivered his inaugural address. A full report will appear in our next issue.

TOPICS OF THE WEEK.

THE CRISIS.

THE week has been marked by several important developments and notable speeches in regard to the crisis in the mining industry. Chief among the latter were the addresses delivered by Mr. Samuel Evans at the Crown Mines meeting and by Mr. C. D. Leslie before the South African Institution of Engineers on Wednesday. Of actual developments the outstanding are the announcements by the Minister of Mines regarding the establishment of a mint at Pretoria, a gold refinery on the Rand, and the appointment of two Commissions to consider questions affecting the low-grade mines and general industrial affairs respectively. The very thoughtful and informative speech made by Mr. Samuel Evans is put on record in another part of this issue, and forms a valuable contribution to our knowledge of the gold question as it affects the Rand. It is an open secret that Mr. Samuel Evans has been one of the most active spirits in the movement promoted by the Chamber of Mines to secure a South African mint and gold refinery. Indeed to him and to Dr. W. A. Caldecott, we believe, the chief credit is due for the fruition of the idea, and we hope that these gentlemen will be given the opportunity to place their advice and experience at the disposal of the new institution. An important contribution to the discussion on the low-grade mines was also made by Mr. C. D. Leslie in his valedictory address at outgoing President of the Institution of Engineers. We hope to print Mr. Leslie's address in full in our columns next week, and note that the Institution is considering the distribution of copies of the address among the labour unions and other public bodies concerned in the future of the industry. Mr. Leslie contends that such is the importance of the continued working of the low-grade mines that not only the Government, by the remission of taxation, but the employees by increased efficiency, and the administrators of the mines by buying in the cheapest market, owe it to themselves to relieve the situation. He is very outspoken regarding the falling off in the efficiency of the service rendered to the industry alike by white and black labour under present conditions, and makes out a strong case for the contention that increased white wages have actually been accompanied by decreased work and effort on the part of the men. Mr. Leslie's views will have to be seriously considered and taken to heart by the men on the mines; and it is of interest in this connection to draw attention to the fact, noted elsewhere in this issue, that the men on one mine have met and decided substantially to increase their efforts in the interests of the mine and of themselves. Not only the men, but the whole community will find Mr. Leslie's address a serious warning in regard to the immediate future of the industry. Some promise of relief is afforded by the speech of the Minister of Mines on Wednesday. A compromise appears to have been arrived at in regard to the mint, half of which for reasons of sentiment is to be at the half-capital, Pretoria—a decision which may fairly be criticised as a half-measure! More satisfactory is the announcement regarding the Commission or Advisory Board which is to sit under the presidency of Sir Robert Kotzé to deal with the low-grade mines. According to the telegraphed report, the Minister says: "The business of the Commission will not be so much to take evidence and enquire, but rather to take a particular mine of the low-grade mines and deal with the practical question of what can be done to continue their lives. Sacrifices will be required on both sides, but he believes that when they have the two sides brought together and are faced with the possibility of the shutting down of a mine, they will bring about some solution; and he thinks the people will support the Commission in any practical suggestion. He is fortified in this belief by the generous

way in which the House dealt with miners' phthisis and remitted the men's $2\frac{1}{2}$ per cent. contributions. He hopes that the discussion of the Bill and the way in which employers and employees will come together will have the effect of some means being devised by which it will be found possible to continue the working of the mines." Stripped of well-meaning platitudes, this statement does mark an appreciable advance in the recognition by the Minister of the need for immediate action. We can only wait and see what the practical result will be. The creation of yet another body to deal with general labour questions is also announced this week. In a telegram to the South African Federated Chambers of Industries' Convention in Durban, the Minister of Mines and Industries states that on the suggestion of the Industrial Advisory Board, the Government was considering the question of summoning a national conference of employers and workers to discuss mutually questions relating to individual employment. The Government considers an exchange of views would be beneficial to both sides, and would have valuable results to individual development, so essential to the progress of the Union. Among points to be discussed, the Minister suggests the following: First, the question of shorter hours; secondly, the rates of wages; thirdly, the effect of the foregoing on various industries in different districts; fourthly, the desirability of extending the Wages Board system to all industries. Thirty delegates are to be selected from each of the following five industrial groups, viz.: Building and construction; manufactures and general production; transportation and communications; and mining. The Government will be prepared to issue rail warrants for the delegates and grant subsistence allowance of £1 per day. Many of the questions—such, for instance, as the "colour bar"—to be considered by the Conference and by the new Board are closely connected, if not identical, and it seems that we are, at last, and as a result of the present crisis in the mining industry, getting to grips with the basic facts of South African industrial economics. It is fervently to be hoped that the decision to do so has not come too late to save the impending disaster in the mining industry.

The Gold Law and the Soldier Prospector: An Important Clause.

With reference to an article recently appearing in this Journal with regard to the Gold Law, in which it was contended by a correspondent that claim holders and prospectors who went on active service overseas (*i.e.*, other than on commando) had no protection for their holdings in terms of the Gold Law, another correspondent writes: "In case your attention has not already been drawn to it, *re col. 1, p. 410*, in your issue of the 7th inst., line 3, from 'but the' to line 6, 'licences,' relief is afforded by section 4 of Act No. 37 of 1917, *q.v.* Nicely hidden away from the public eye, is it not!" Act No. 37 of 1917, section 4, reads as under: "Any person who is on active service outside the Union with any of His Majesty's naval or military forces during the present War shall, notwithstanding anything in any mining law contained, be entitled within three months after the termination of such service to renew any licence which having been caused under any such law by any officer of the Mines Department, is, at the date when such person left the Union on such service and three months immediately prior thereto, held by him otherwise than jointly with another who is not on such service: Provided that there shall have been given by or on behalf of such person to the authority charged with the renewal of such licences, a written notice stating the date of such person's departure from the Union on active service and the date when such service ceased. If the licence is renewable under this section no licence moneys shall be payable in respect of the period between the date when the said person left the Union on such service and the date of the renewal." We are grateful to the correspondent for drawing attention to this matter, which will be of great interest to many soldier prospectors and small mine owners.

THE MODDER EAST'S HOPEFUL OUTLOOK.

Defining the "Pay" Areas—Recent Developments Encouraging—Ore Reserves for the Greater Part in a Compact Block.

MODDER Easts—the latest of the Modder flotations—continue to engage the attention of the public, and the shares in the vicinity at par appear to us to constitute a fairly easy inroad into the Modderfontein area for the small capitalist. We do not, however, wish to create the impression that the Modderfontein East mine as disclosed by the development effected to date and the presumptive grade of the property as a whole based on the records of adjacent properties can be regarded as being comparable with the New Modder, Modder B., Modder Deep and Modder Government Areas in so far as grade and profitability per ton over the whole area are concerned. The Modderfontein East is essentially a property in which the principles of selective mining may best be practised. It may be recalled that this company was registered in the Transvaal in July, 1917, to acquire (1) the assets of the Cloverfield Mines, Ltd., consisting of 800 claims on farm Cloverfield No. 12, Boksburg district; (2) the assets of Rand Klip, Ltd., comprising the entire unproclaimed freehold farm Klipfontein No. 11, containing 3,451 morgen in the same district; and (3) a lease granted by the Government in respect of 650 claims on farm Modderfontein No. 6, Boksburg district, Eastern Witwatersrand, Transvaal. As consideration for the granting of the lease the Government of the Union of South Africa is entitled to ten per cent. of the total profits in addition to any other taxation payable to the Government. The total mining area will thus be between 2,250 and 2,450 claims. At the time of acquisition there were three equipped shafts, one on the Cloverfield section and two on the Rand Klip. Two new circular shafts, 1,840 ft. apart, were commenced on the Government ground, which is that portion of the property adjoining Modderfontein B. Gold Mines, Ltd. No. 2 shaft is 18 ft. in diameter and No. 3 12 ft. Arrangements were made with Modderfontein B. Gold Mines, Ltd., for the extension of its 2nd level into the Modderfontein East property. The eastern area (Rand Klip) will not be attacked until a later date. The reef, where recently encountered in No. 2 shaft gave poor values, but an eighteen feet circle in a property of this size gives no true criterion whatsoever of value, and it will be surprising if further development work from this shaft and from No. 3 does not disclose better results in the very near future. It is important to note that the total development footage carried out in the Modder East from its inception up to the end of last March was 17,053 feet, and of this 9,384 feet sampled on reef disclosed a width of 18 inches and a value of 16.2 dwts. per ton. Moreover, it should be observed that in the report of Mr.

J. H. Twiddy, Inspector of Mining Leases, published in the *Union Gazette* of June 13, 1919, the concluding paragraph relative to the Modderfontein East reads: "According to the statement made by the chairman at the extraordinary general meeting of the shareholders of the company held on the 16th May, 1919, the developed ore reserves as at the 30th April amount to 605,000 tons, of a value of 8.3 dwts. over an estimated stoping width of 56 inches. Most of this reserve is situated in a compact block south of the incline from the No. 1 shaft and close to the boundary of the Geduld Proprietary Mines, Ltd." The fact that this reserve is in a compact block is most important. The great difficulty in connection with a property like the Modder East is to define the boundaries of the profitable areas. This is being successfully achieved at the Modder East, and although a fair portion of the company's claim holding may be determined to be unpayable we believe that a mine of substantial size and containing ore of profitable value will be proved to exist there in the near future. We understand that, as a result of recent development several zones of considerably more than average value have recently been defined and that the outlook for this company is at least hopeful.

Zaaipplaats Tin.

The results for the month of May, 1919, are as follows: Days run, 27; concentrates won, 40 tons; estimated profit for the month, excluding Government taxes and directors' fees, £1,591 4s. 1d.; capital expenditure, £267 5s. 11d.

The Lonely Mine.

The following are particulars of output of gold, etc., from the Lonely Mine for the month of May, 1919:—Mill ran 717 hours; crushed 4,680 tons; fine gold recovered, 1,916.322 ozs.; value, £8,056 15s. 9d.; slimes treated, 4,680 tons; fine gold recovered, 3,887.038 ozs.; value, £16,346 4s. 1d.; total fine gold, 5,803.350 ozs.; total value, £24,402 19s. 10d.; profit, £13,252 19s. 8d.

In connection with the discovery of iron ore on farms in the vicinity of Boskop, it is interesting to hear (writes the Potchefstroom correspondent of the *Johannesburg Star*) that matters have advanced so far that about 500 tons of ore are to be taken out and shipped off to Vereeniging for testing purposes. The discovery promises to be of great importance to the district.

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THE FATE OF THE GERMISTON MINES.

The Centre of a Low-Grade Area—Unremunerative Mines—The Government Unmoved—Low-Grade Ore Reserves—The Loyalty of the Mines to Employees—The Workers Decide to Increase Efficiency—What Loyal Co-operation Can Do—An Improvement of 25 Per Cent. Practicable—Is Germiston to Share the Fate of Ookiep?

Few towns are confronted by such a wholly unpromising outlook as Germiston. Nothing short of a complete change on the part of the Government in its policy towards the mining industry or a substantiation of Mr. Wm. Bleloch's theories in regard to a triplication of the payable conglomerates of the Witwatersrand would appear to be capable of saving the second largest town of the Witwatersrand from ruination. Germiston happens to be the centre of one of the low-grade patches of the Witwatersrand, and at a meeting held there the other day, at which the Mayor of Germiston and Mr. C. D. Leslie, consulting engineer to the Gold Fields group, were present, the seriousness of the situation was discussed and ways and means of staying off disaster were considered. Some people, including certain of our legislators, appear to believe that the mining industry is merely crying "Wolf" at the present when the unfortunate predicament of many of our mines is so obvious.

UNREMUNERATIVE RESULTS.

It will not therefore be amiss if we give a table exhibiting the results secured in April this year by the mines which extend from the Geldenhuis to the E.R.P.M., of which section of the Witwatersrand Germiston is roughly the centre.

	Capital.	Tons Milled.	Costs.	Profit or Loss.
E.R.P.M.	£2,445,897	110,000	£128,181	*£10,020
Geldenhuis Deep ...	585,753	17,500	58,099	†1,018
Jupiter	1,014,200	21,200	27,266	†3,590
Knight Central ...	900,000	20,000	29,257	*706
Knights Deep ...	743,526	82,900	71,696	†1,189
New Heriot	115,000	10,610	15,396	†718
New Primrose ...	325,000	19,000	15,242	*1,017
Nourse Mines ...	827,821	38,100	52,398	*1,423
Rose Deep	700,000	53,000	48,968	†13,892
Simmer and Jack ...	3,000,000	46,800	19,120	†3,468
Simmer Deep ...	1,650,000	38,600	48,222	†9,432
Witwatersrand ...	475,000	32,500	35,124	*5,609
Wit. Deep	550,000	30,450	37,116	†921
Totals	13,332,197	550,660	£616,115	*£9,334
				* Profit. † Loss.

THE ORE RESERVES.

We commend a study of the appended table to all those misguided sceptics who believe, or profess to believe, that the mines are keeping something up their sleeves—in other words, are neglecting their richer stopes and stoping only in their low-grade areas at the present. High-grade stopes are unfortunately the exception and not the rule in this portion of the Witwatersrand. If a belief that the rich portions of these mines are being purposely neglected at the present day is held, it can very easily be disposed of by examining the latest statistics of the companies in question in regard to their payable ore reserves.

	Tons.	Dwts.
E.R.P.M.	2,268,000	6.5
Geldenhuis Deep ...	1,519,600	5.9
Jupiter	674,000	5.98
Knight Central ...	275,000	6.9
Knights Deep ...	1,671,000	4.43
New Heriot	223,420	7.12
New Primrose ...	65,690	6.1
Nourse Mines ...	1,513,600	6.8
Rose Deep	2,909,520	5.3
Simmer and Jack ...	1,538,000	5.67
Simmer Deep ...	932,000	5.02
Witwatersrand ...	1,399,000	6.0
Wit. Deep	953,665	8.3

15,963,495

SOME TELLING FIGURES.

It will be observed that with the exception of the Wit. Deep and New Heriot the ore reserves of none of these properties have a value of more than seven dwts. per ton, and the recoverable value for the whole of the 15,963,495 tons dealt with in this schedule does not exceed 6½ dwts. per ton. Working costs are at present averaging 22s. 9d. per ton, so that this indicates a working profit of about one shilling per ton. This again represents a total on 550,660 tons crushed per month of £330,000 per annum, which on a capital of £13,352,197 represents a return of only two and a half per cent. In actual practice considerably worse results are being obtained.

FURTHER PIN PRICKS.

Critical is the only word that can be applied to the position at these properties; in fact at several of them it can only be assumed that the crisis is over and cessation of work is inevitable, in view of the tremendous additional taxation involved in the new phthisis legislation and the refusal of the Government to allow even an experiment with tropical labour. Had the Government acquiesced in the suggestion that the mint should be located on the Rand, it would have relieved the situation. Germiston would be an ideal site for the mint and refinery, and had this location been agreed to it would have helped to brighten the lowering atmosphere which surrounds that town.

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WHAT IMPROVED EFFICIENCY CAN DO.

In the absence of any sympathetic relief measures by the Government or of any attempt to curtail taxation or make any definite statement as to drawing the line somewhere in regard to the mulcting of the mines, it seems to us that several of the lower-grade propositions in the vicinity of Germiston and elsewhere have no alternative to closing down. Cessation of work at some properties would certainly have unsatisfactory influences on other and adjacent mines—ventilation, for instance, might be impaired and water and subsidence difficulties be increased. At a number of mines the position is, we fear, past remedy, but at others the situation could be substantially improved by an increase in the efficiency of the labour force. It is common knowledge that labour efficiency has depreciated greatly at the majority of the Witwatersrand mines during the past few years. A disposition to discuss imaginary grievances and all ways and means whereby extra pay can be earned except through the medium of better services has unfortunately been much more noticeable than any whole-hearted effort to come to the assistance of mines struggling with adversity and save the situation by loyal co-operation. It is, however, certainly encouraging to learn that at one or two mines which have fallen upon evil times there have recently been meetings of employees—the employees have called the meetings themselves—at which the practicability of improving the outlook for the companies concerned has been discussed. And at one such meeting at least the workers have voluntarily resolved that the shutting down bogey can and will be banished by all employees doing everything in their power to speed up efficiency and thus keep the mill amply supplied. The employees of this property feel confident that by concentrating all energies on this problem the efficiency of the mine can and will be improved by something like 25 per cent. and anyone who has knowledge of the extent to which

efficiency has depreciated at many Rand mines within the past few years will agree that the improvement of man power (and particularly underground man power) by one-quarter is well within the bounds of practicability.

A CRITICAL SITUATION.

It is to be feared that at several of the low-grade properties the position is practically hopeless. But on the other hand there is, we think, every reason for believing that at some mines a determined effort on the part of the workers to pull the mine round might save the situation. The mines have played the game during the war, and they are playing the game now with employees who proceeded on active service, whether they went with or without permission. If not for the sake of loyalty, for the sake of the workers themselves who sink or swim with the mines, it is absolutely imperative that employees should do all in their power to save those mines which still are capable of salvation, otherwise closing down is inevitable. The whole Rand and the whole country will suffer thereby, and few places would feel the resulting depression so keenly as Germiston. The fate of that town, in fact, is absolutely trembling in the balance, and only immediate reason on the part of the Government or an instant and supreme effort on the part of employees can save it from the fate of Ookiep.

S.-W. TRANSVAAL DIAMONDS:
APRIL RETURNS.

The returns for the month of April from the alluvial diamond diggings of the South-Western Transvaal show a maintenance of the improved position, both as regards the total finds and the prices obtained. The returns for the first four months of this year have been as under: January, 3,385 $\frac{3}{4}$ carats, value £31,685 8s.; February, 4,631 $\frac{1}{2}$ carats, value £41,968 8s. 6d.; March, 5,431 $\frac{1}{4}$ carats, value £54,166; April, 5,530 $\frac{3}{4}$ carats, value £59,261 7s. 6d. There were 44 producing areas in all, and those situated in the Bloemhof district are given without distinguishing mark. The list is as follows:—

	Carats.	Value.
Kameekuil	1,246 $\frac{3}{4}$	£13,810 15 6
Blesbokfontein	1,018	10,697 7 0
Rietkuil: Uys' Rush	911 $\frac{3}{4}$	10,111 12 6
Kareepan 137: Lavine's	626 $\frac{1}{2}$	7,025 15 0
Syfergat	142 $\frac{1}{2}$	2,033 2 6
London	18 $\frac{3}{4}$	1,966 10 0
Rietkuil: Odendaal's	178	1,764 12 6
Bloerhof	137 $\frac{1}{2}$	1,443 2 6
Kareepan 137: Outspan	121	1,212 0 0
Mooifontein	103 $\frac{3}{4}$	953 15 0
Leenwfontein	101 $\frac{3}{4}$	816 15 0
Schweizer-Reneka	73 $\frac{1}{4}$	812 17 6
Plessisdam	89 $\frac{1}{4}$	678 2 6
Dievedraai	60 $\frac{3}{4}$	649 7 6
Goudplaats	51 $\frac{1}{4}$	608 10 0
Eastleigh	40	507 15 0
Klipkuil	19 $\frac{1}{2}$	464 0 0
Christiana	52 $\frac{1}{2}$	451 15 0
Grootdoorns	36 $\frac{1}{4}$	390 0 0
Vechtvallei	26 $\frac{1}{2}$	287 10 0
Doornbult	22 $\frac{1}{2}$	265 7 6
Mimosa	20	257 0 0
Bloemheuveld	31 $\frac{1}{4}$	219 10 0
Koksrust	19 $\frac{1}{4}$	206 5 0
Koppiesvlei	15 $\frac{3}{4}$	203 5 0
Bessieslaagte	13 $\frac{1}{2}$	189 10 0
Katdoonkraal	28 $\frac{1}{2}$	164 15 0
Nauwpoort	11	156 10 0
Holloway's Rust	21	119 10 0
Maroetjesfontein	18 $\frac{3}{4}$	128 0 6
Cawood's Hope	12 $\frac{1}{4}$	115 0 0
Rietput	18 $\frac{1}{4}$	83 7 6
Pantfontein	4 $\frac{1}{4}$	80 15 0
Zevenfontein	8	74 10 0
Boschplaats	8 $\frac{1}{4}$	68 15 0
Middelbosch	6 $\frac{1}{4}$	66 0 0
Diamantdoorns	8 $\frac{3}{4}$	62 10 0
Assegai	3	31 0 0
Italie	2 $\frac{1}{4}$	12 0 0
Sandringham	2	11 0 0
Syferfontein	1	7 10 0
Langkuil	1	6 10 0
Randevlei	1 $\frac{1}{4}$	5 0 0
Rooipoort	$\frac{3}{4}$	3 0 0

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WHAT TO DO WITH OUR MINE DUMPS.

Bricks, Botany and Potash—President Kruger's Threat—The Failure of Many Schemes—The A.F.P. Solve the Question—How the Robinson Supplied the Great Staircase—Our Legislators Wield the Axe of Umslopogaas—A Hint to Shareholders and Parliament—"The Last Days of Germiston" Coming.

[By A CORRESPONDENT.]

THE problem of what to do with our mine dumps, like the problem of the poor, is always with us. President Kruger threatened to make the Uitlanders replace these siliceous monsters into the holes in the ground from which they had been excavated, and it would probably flatter the late Oom Paul's subtle conceit if he could but know that we verily have attempted to do this by means of what is technically termed sand filling.

SEVERAL SUGGESTIONS.

But we have continued to crush ore much faster than we have found it scientifically or industrially practicable to put it back and each year these "icebergs of the veld," as a poet who was not too sound in his metaphors once called them, grow in size and lugubrious immensity. Sir Lionel Phillips, it may be recalled, once sought to turn the dumps of the Rand into cones of floral splendour. He thought they could be "botanized," if the word is permissible. Yet another genius considered that they could be turned into bricks. But these schemes have "gang agley," and the population of the Reef still is confronted with these spectacles of fine ground industry, the products of the mills of the Devil (as I suppose Mr. Merriman would regard them); the mills that grind slowly "but grind exceeding small."

ABOMINATIONS OF DESOLATION.

Artists have painted these things and a few travellers have extolled their weird beauty; the exultation of the travellers, let it be observed, has always been in direct ratio to the brevity of the visitors' sojourn in Johannesburg. For had you lived on a mine as I have you would not find a vast amount of language to employ in praise of mine dumps. You may offload thousands of tons of development rock on to their plithisical flanks, but it will not save your hearth and home from silicosis when the wind is blowing.

I read that in America mine dumps are being re-treated for the potash they contain, and it is pointed out that some of our Black Reef tailings heaps have been turned over for sulphur. But the past history of previous attempts to industrialise our dump heaps compels scepticism on these points.

ALLAN QUATERMAIN AT THE ROBINSON.

It is an interesting fact that where hard matter of fact industry has failed, imaginative drama has succeeded. The African Film Productions, Ltd., appears to have found the

first real use for our tailings heaps. That company has been producing a film version of Sir Rider Haggard's famous romance, "Allan Quatermain." Perhaps you will recall in the final chapters of that phantasy the mighty defence of the giant stairway by the warrior Umslopogaas. All along it was realised that the portrayal of that stairway and the scene of slaughter enacted on it would be the difficult portion of the photoplay. Where could such a stairway be found? It had to be built. And having been built, on what could it rest? After much endgelling of brains the idea of a Rand mine dump was hit upon. The directors of the old Robinson outcrop were approached. They assented. The stairway was built at a cost of several hundreds of pounds, and thanks to the board, Mr. Cazaret (the company's consulting engineer), and the mine manager, the great fight on the stairway was reconstructed over the Robinson dump a few days ago. Many returned soldiers earned a little useful pocket money on that occasion. But these Zu Vendis went down before the rubber axe of Umslopogaas like wheat beneath the sickle of the reaper, and a magnificent film of spectacular bloodshed has been the result.

THE MINES AS MOVIES.

"Shame!" perhaps you will say. "Shame! that this grand old property, once the show mine of the Rand, should be so industrially prostituted that it has become an action studio for the omnivorous movies!" Possibly. But there is this about it—surely it is better that the industry should go to the bioscopes rather than it should go to the dogs. And it is in the direction of the kennels that many of our mines are fast travelling, thanks to our utterly disinterested legislators. Why begrudge a poor shareholder the few pence that the sale of the bioscope rights of his mine might bring him by way of a final liquidation dividend? I recommend a careful consideration of the whole matter to stockholders and to those members of the Government who seem so intent on wielding destruction to the industry, even more callously than giant Umslopogaas wrought death amongst his foes. As things are going at present the day cannot be far distant when we shall be invited to witness "The Last Days of Germiston—Minister Malan's Terrific Spectacle (as they put it in Los Angeles), featuring Douglas Christopher, C. D. Leslie, Senator White and Dr. Strachan." "Intolerance" and "The Death of a Nation" with all our dunderheaded Parliamentarians in the east appear to be other "Educational Sensations" of the near future. There was a good deal of cheerful philosophy in old Oom Paul's command that we should get rid of our dumps. But when you have a Government like ours the "dumps" are not very easily got rid of—are they?

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OUR COAL INDUSTRY: SOME IMPORTANT DEVELOPMENTS.

Natal and the Expansion of the By-Product Trade—Experts on the Spot—Important Firms Interest—The Government and the Coal Fields—Our Forthcoming Coal Supplement.

We understand that important developments are pending in connection with the extension of the coal by-product industry in Natal. At least one expert from overseas is now in the Garden Colony, and the whole subject of the manufacture of sulphate of ammonia, tar and benzol is being revived and the erection of new plants embodying the latest ideas in by-product practice is under consideration. We learn, too, that a prominent South African mining and financial house is likely to closely identify itself with the South African by-product trade in the near future. A great deal of Natal's present prosperity is due to the marked development of the coal industry of that Colony during the war. In the last four or five years Durban has become the most important coaling station in the Southern Hemisphere and the increased volume of coaling trade which has been brought to Durban by the Navy and troopships since 1914 is not likely to witness any appreciable diminution through the cessation of hostilities.

DURBAN'S IMPORTANT POSITION.

The geographical position of Durban in relation to trade routes and the facilities for cheap and rapid bunkering which have been built up at that port place Natal in a most favoured position. Moreover, she possesses enormous coal resources at short distance from the sea board, and the down hill gradient from the carboniferous areas of the northern highlands down to the Indian Ocean is all in favour of the further development of Durban as a great export sea town

both for coal and its by-products. A great deal of Natal's coal is not inferior to the average Welsh product, and if adequate rolling stock and labour were available there can be little doubt that Natal could almost immediately double her export trade. As we have before remarked, the lethargy of the Government in regard to the proper development of the coal export trade is incomprehensible. Not only have we the whole of the coal trade of the East lying within our grasp—waiting to be picked up, so to speak—but the whole vast coal business of the Argentine and other South American Republics is waiting to be captured and might very easily be won by the development of a coal export trade via our new Atlantic seaboard in South-West Africa.

AN IMPORTANT WORK.

Only by persistent hammering away at this point are we likely to bring the Government and the public to a fitting sense of the value of this great asset of ours, which remains in a mere embryonic state of development. In this connection we wish to direct attention to the special coal supplement to the *S.A.M. & E.J.* which will be published in the course of the next few months. A special technical commissioner of this paper is arranging to visit all the important collieries of the Union with a view to obtaining the latest data, plans and photographs, etc., on the spot. The coaling facilities at Durban and Delagoa Bay will also be dealt with in detail, and there will be special sections of the supplement devoted to coal mining machinery, by-product plants, coal resources and the outlook for expansion of the overseas by-product trade. The supplement will prove of the utmost value to all interested in the South African coal trade, and as an advertising medium will be unequalled. All communications regarding this important work should be addressed to the *S.A. Mining and Engineering Journal*, Box 963, Johannesburg.

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

June 24.—Village Deep, Ltd., at 2.30 p.m.

June 24.—Geldenhuis Deep.—Twenty-fourth Ordinary General Meeting at 11 a.m.

July 17.—Modder Deep Levels, Ltd., Extraordinary General Meeting, Consolidated Building, 11.30.

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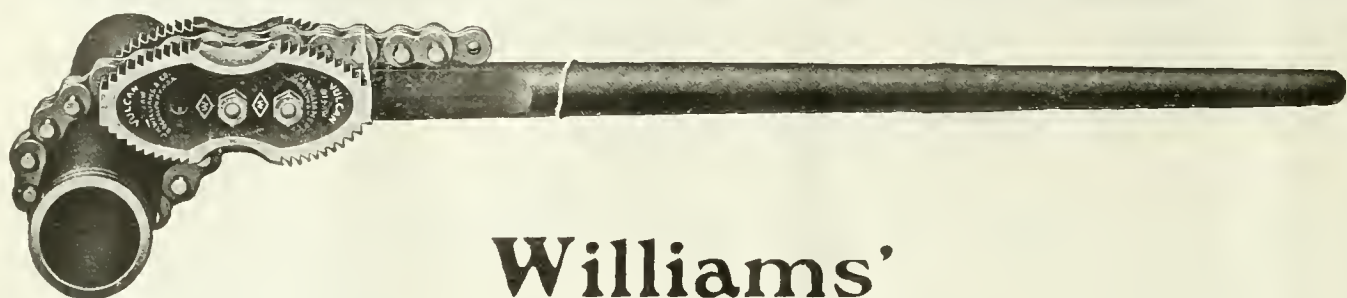
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MINING LEASES: GOVERNMENT INSPECTOR'S REPORT.—I.

Points from Mr. Twiddy's Views on the Springs, Brakpan and State Mines.

In his reports for the quarter ended March 31, Mr. J. H. Twiddy, the Inspector of Mining Leases, writes, *inter alia*, as follows:—

BRAKPAN MINES, LIMITED.

During the quarter the reserves as at the 31st December, 1918, were estimated, the pay limit adopted being 4 dwt. over a stopping width of 50 inches. The average total working costs per ton milled for the year 1918 were 23s. 5d., which, after making allowance for sorting, residues, etc., is equivalent to a reserve block value of 5'14 dwt. It will therefore be seen that there is a considerable margin between this value and the minimum value of the payable ore reserves. It is claimed that present working costs will be materially reduced, but it is questionable as to when they will again reach such a low figure as to make 4 dwt. ore profitable to work, this value, after adjustment, only allowing a recovery of about 17s. 10d. per ton milled. In 1912 the working costs were 17s. 4d. per ton milled—the lowest reached by this company—the next lowest costs being in 1915 when they were 18s. Of course it is understood that when the mine reaches its final working stages and when there will be no further development charges this 4 dwt. ore will become payable, but it is questionable whether this lower grade ore should be described as payable without some qualifying statement. The following table shows the ore reserves as at 31st December, 1918, split up into "payable" and "unpayable," the former sub-divided on the basis of a pay limit of 4 dwt. and 5'14 dwt.:—

	4 dwt.			5'14 dwt.		
	Tons.	Value.	Stopping width, dwt. Inches	Tons.	Value.	Stopping width, dwt. Inches
(a) Payable—						
Available	2,071,830	8'69	68	1,782,975	9'36	
Unavailable	420,338	9'28	69	387,264	9'68	
Shaft, etc., pillars	225,132	7'84	71	179,184	8'71	
Total	2,718,000	8'71	68	2,319,423	9'37	
(b) Unpayable	11,040,000	2'21	58	11,408,577	2'28	
Total	2,718,000	8'71	68	2,349,423	9'37	

From the above it will be seen that 368,577 tons, equivalent to 132 per cent. of the claimed payable ore reserves, are below the value required to meet an average working cost of 23s. 5d. per ton. The payable ore reserves as at 31st December, 1918, show a decrease of 550,282 tons compared with these reserves as at 31st December, 1917. The total tonnage stoped from payable ore reserves during the year 1918 was 443,292 tons, whilst the payable ore tonnage developed during the same period was 459,909 tons, making an excess of payable ore developed over ore mined from payable reserve of 16,617 tons, but, owing to adjustments and mainly to the elimination of a large tonnage previously included in the payable reserves, but which, as stoping progressed, proved to be of a value below the pay limit, this excess of 16,617 tons has been converted into a decrease of 550,282 tons, so that the total adjustments approximate a total decrease of 566,899 tons in the payable ore reserves. It may be observed that the gold has a tendency to run in shoots, and the boundaries of blocks are sometimes drawn to follow the trend of these shoots, but it does not necessarily follow that the shoots have the regular boundaries so assigned to them. Considering that the length of reef exposed by development on the perimeters of the blocks of ore does not average more than 52 per cent. of such perimeters, there is a large margin of error in the location of the shoot boundaries and therefore too much reliability cannot be placed on the ore reserve figures. The existing payable ore reserve are by no means evenly distributed over the mine, as by far the greater percentage of the payable ore is situated in two areas, one towards the centre of the mine on the eastern boundary and east of the dyke, and the other to the south of this area and east of the main incline south, called respectively Areas Nos. 1 and 2 in the following table, which shows the distribution of the payable ore:—

	Available.		Unavailable.		Pillars.		Totals.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
Area No. 1	664,776	12'4	128,353	15'5	35,857	11'5	828,936	12'8
Area No. 2	1,103,021	6'8	149,086	6'7	23,195	5'2	1,275,302	6'8
Various	304,033	7'4	142,899	6'4	166,780	7'4	613,712	7'2
Total.	2,071,830	8'7	420,338	9'3	225,832	7'8	2,718,000	8'7

In the western portion of the mine, south of the No. 2 shaft, there is a big area of ground and no great amount of development has been done in it. Development is now proceeding in five ends, and the total footage sampled during the quarter amounted to 800 feet, of which 140 feet have proved payable. Considering the tonnage mined from payable reserves during the half-year ended 31st December, 1918, was 47 per cent. in excess of the payable ore developed during that period, it would have been better had a more active policy been adopted for opening up this section of the mine. It is of the utmost importance that development be pushed forward at all available point with the object of open-

ing up additional payable shoots, as the southern section of the property, the development of which is dependent on the two vertical shafts now being sunk, will not be available for development before probably three or four years. The main incline shaft has been continued 552 feet into the lease area, and the ground so far opened up has been of low grade and unpayable. The average width and value of the ore mined from the payable reserves, according to data adopted in the estimation of reserves as at 31st December, 1918, were 9'47 dwt. over 65'47 inches, whilst the payable ore reserves as a whole at that date averaged 8'71 dwt. over 68'25 inches. It is satisfactory to note that the ore mined in the payable reserves turned out to be higher in value by 1'93 dwt. than the estimated value. The milling capacity is 70,000 tons per month, and to supply this amount of ore about 80,000 tons would have to be mined, whereas the average monthly tonnage mined during the quarter was only 51,878. The following are important facts which should be taken into consideration in arriving at a reason for the full tonnage not being reached. The payable ore reserves are largely confined to the two areas Nos. 1 and 2. From the former, where the average value of the ore is very considerably higher than in the No. 2 area, the due percentage of the tonnage was drawn. In the No. 2 area the blocks are not sufficiently opened up to allow of their being worked in their due percentages. The remaining blocks of payable ore are more or less scattered over the northern and western areas, and owing, in many cases, to their isolated positions, it has not been economically possible to draw the balance of the payable ore from them. The conclusion to be arrived at then is that there was not a sufficient number of payable ore blocks developed and get-at-able to supply the mill to its full capacity. Assuming that the required tonnage could be mined from areas Nos. 1 and 2, it is questionable whether the ore could be handled underground owing to its centralisation and consequent confinement to two haulages, the delays and troubles in connection with which are frequent. Improvements consisting of cross-cuts and ore-passes are being made, which will eventually facilitate the handling and storage of ore from these two sections, but it will be some time before the full benefit from them will be felt.

GOVERNMENT'S SHARE OF PROFITS.

The share of the divisible profit of the company for the year 1918 accruing to the Government was £54,998, arrived at as follows:—

Value of gold produced	£1,097,747
Less—Working costs, general administration, and amortization allowance	823,475
Divisible profit	£274,272
Share thereof due to Government:	
(1) Five per cent. participation in profits in terms of the lease	£13,713
(2) Normal and dividend taxes under the Income Tax (Consolidation) Act, 1917	41,285 54,998
Balance to company	= £219,274

The mine has been as satisfactorily and is economically managed as the existing circumstances will permit, and the diminution in the output is due, in my opinion, to the condition that the mine has reached and which no doubt was difficult to anticipate; that condition being the concentration of the principal payable ore bodies together with the difficulties of handling the broken ore concomitant with such concentration.

(To be continued.)



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PERSONAL.

Sir Abe Bailey, Bart., has left for England.

Mr. Herbert Ainsworth has left on a six months' business trip to England.

Mr. J. H. L. Manisty has been elected President of the Stock Exchange in place of Mr. D. C. Greig, who has resigned.

Mr. W. H. Dobson, M.S.A.I.E., F.R.M.S., town engineer of Grahamstown, has secured a similar appointment to the Vereeniging Municipality.

Mr. D. C. Greig has formally resigned the chairmanship of the Committee of the Johannesburg Stock Exchange, to the great regret of the members of the House.

His Excellency the Governor-General has been pleased to authorise Mr. G. W. Herdman, Assistant Director of Irrigation, to act as Director of Irrigation during the absence on leave of Francis Edgar Kanthack, C.M.G., Director of Irrigation.

Glynn's Lydenburg.

The directors of the Glynn's Lydenburg, Ltd., report that the working profit for the quarter amounted to £1,369. There was no capital expenditure during the quarter, and no authorised votes were open at April 30, 1919. In Compound Hill 897 feet were driven, 455 of which were on reef; 408 feet were sampled, showing 340 feet payable of an average value of 9.4 dwts. over 18.4 inches. In addition 1,660 feet were driven, risen and sunk in developed ground in Compound Hill, and 337 feet in the Werf Mynpacht. Development operations in Compound Hill are gradually being increased and pushed forward as fast as possible. Three shifts are now being run on all the principal drives. No. 3 South has advanced 192 feet during the quarter, and is still in good ground and on fair lode. Drives are being put off from each side of this drive, and it is hoped shortly to have three faces going southward which will give a frontage of 640 feet between the outside drives. A power line is being erected from the mill to Compound Hill Mine (a distance of about a mile), the power being needed for pumps and ventilation. The opening up of the Werf Mynpacht is still continuing. The floods and stoppage of the mine through the influenza epidemic had caused most of the drives to be completely blocked up by falls of ground, all of which have to be re-opened. It will take some months before any fresh development work can be started. The position is improving daily and water is decreasing, but this mine is still seriously handicapped for stoping faces. The work of re-timbering the Osborn Shaft has been started. During the quarter natives came in fairly freely, but the quality leaves much to be desired. They seem far inferior to those the company had prior to the influenza. White labour is also not up to its former standard of efficiency. The rainfall for the quarter was 11.51 inches on 30 days, as compared with 20.18 inches on 36 days for the corresponding quarter of last year.

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TRANSVAAL CHAMBER OF MINES: QUARTERLY REVIEW.

Points from the Report of the Executive Committee on Industrial Questions.

THE monthly report issued by the Department of Native Affairs shows that at the 30th April, 1919, 282,008 coloured persons were employed in labour districts of the Transvaal. Of this number, 206,998 were engaged on mines and on the various classes of works, i.e., chemical, metallurgical, brick-making and other works, as defined in the Coloured Labourers' Health Regulations, and 75,010 were in other employ. In order to co-ordinate the policy of the various organisations dealing with native labour, a committee representing the Chamber, the Native Recruiting Corporation, Ltd., and the Witwatersrand Native Labour Association, Ltd., has been formed. All important matters of principle affecting native labour will be referred to and reported upon by the new committee before being dealt with by any of the three bodies mentioned. In May the Chamber presented a statement to the Departmental Committee on Trading on Mining Ground, advocating the grant of facilities to enable approved co-operative concerns to establish stores on mining areas. Mr. W. Gemmill gave evidence before the Committee on behalf of the Chamber. Following representations from the Chamber, supported by the Johannesburg Municipality, the Government has intimated that it intends to continue the operations of the Sterkstroom disinfecting station. Your Executive Committee has made representations to the Railway Administration with a view to an improvement in the treatment of natives whilst travelling on the railways.

GENERAL HEALTH CONDITIONS ON THE MINES.

The results of the 23rd and 24th dust sampling surveys of the mines show that the continued improvement in dust conditions underground has been maintained. The results of these two surveys were as follows: 23rd survey, 2.1 milligrams; and 24th survey, 2.1 milligrams. In addition, 11,978 dust samples taken by mine dust inspectors during the five months ended May 31st were analysed in the Chamber's laboratory. A large number of experiments continue to be made with the komimeter method of estimating dust. The Miners' Phthisis Prevention Committee, which was established by the Government in February, 1912, has now completed its work, and has been dissolved as from 31st March, 1919. Your Executive Committee has conveyed to the Government its high appreciation of the excellent work performed by the Committee under the able chairmanship of Sir Robert Kotze—work which has been of the highest value to the mining industry, and particularly to the underground employees. The extent to which the provisions of a separate sanatorium for silicotic sufferers (the Wedge Farm) has been appreciated, is evidenced by the fact that no less than 31 patients are now in residence at that institution, under very favourable circumstances from the health point of view. The Chamber has re-nominated for three years its representatives on the Board of the Transvaal Miners' Phthisis Sanatorium, namely, Mr. J. Jeppe (chairman), Sir William St. John Carr, and Messrs. Raleigh and E. J. Renaud.

UNDERGROUND OFFICIALS.

A schedule of minimum rates of pay for underground officials has been practically agreed upon between the Chamber and the Underground Officials' Association, and will be brought into force at an early date.

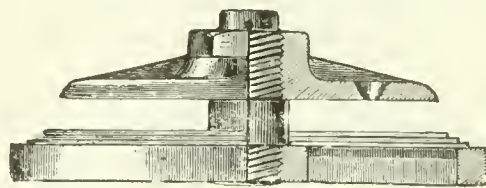
INDUSTRIAL CONDITIONS OF WHITE EMPLOYEES.

The following are the more important of the recommendations of various Boards which sat on the dates named:—That alterations by superior officials of instructions given by shift bosses to employees should take place as seldom as possible, and that the shift boss in question be invariably advised of the alteration by the official making it (Geldenhuys Deep case, 23rd April, 1919). That no man deputed to conduct the examinations prescribed in Regulation 37 (1) (a) of the Mines and Works Act should be assigned duties which would prevent the effective carrying out of such examinations, and that should an engineer prevent such a man from carrying out the above-mentioned examinations, he (the engineer) assumes the responsibility under the regulation referred to (Randfontein (Richards) case, 19th and 20th February, 1919). That deputations should not be appointed to interview the manager during working hours, except with his consent ("Shortage of Steel" case, Modderfontein B, 27th and 28th January, 1919). That during a shift no man should be permitted to leave his work without the permission in writing of the shift boss or other authorised official ("Shortage of Steel" case, Modderfontein B, 27th and 28th January, 1919). That in the matter of the refusal of surface vacancies by underground engine-drivers it is impossible to lay down any hard and fast rule, such, for example,

as to state that in every case a man refusing a surface job should become junior in service for the next surface job; but that each case should be judged on its merits (Crown Mines case, 19th May, 1919). That the position of engine-drivers who had been employed on the surface, and who lost their billets and were ineligible for underground work owing to physique, be discussed between the Chamber and the unions with a view to possibly modifying the existing arrangements (Crown Mines case, 19th May, 1919). That the question of including in the reduction workers' agreement the following classes of employment be discussed between the Chamber and the unions, viz.: Sorting men (or "sorting overseers"), waste dumpmen and rock haulage men (Crown Mines case, 15th April, 1919). In regard to the retrenchment which must occur on the return of mine employees from active service, the general policy of the Chamber has been outlined as follows:—(1) That employees of the mines who proceeded on active service, whether with or without permission, be given their billets back—subject, of course, to the mine being still working; (2) that the temporary men who had been employed in place of the man at the front be placed as far as possible, the extent to which they could be retained being largely dependent on the native labour supply; and (3) that men from outside, who have not previously worked on the Rand, would come after these classes in priority of opportunity for employment. These arrangements indicate merely the general line decided upon by the industry in the matter. Thus, they do not prevent the apprenticing of Witwatersrand lads who, through being at the front, have been prevented from learning an occupation, nor the engagement of men with special claims for employment or special knowledge or experience rendering it desirable from the Mines' point of view that they should be employed; and, further, they do not bind the Mines to retrench men absolutely on the basis of seniority of service, although that factor would naturally be one taken into account. A new form of underground contract, on the basis of piecework plus guaranteed payment, removing certain anomalies which existed under the previous system, has been drawn up by the Chamber, and agreed with the South African Mine Workers' Union. The new form is now being brought into force. The Chamber has had under consideration for some time the desirability of ensuring one day's rest in seven for reduction workers, and certain proposals are at present under discussion between the Chamber and the Reduction Workers' Association.

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ciation in this connection. Arrangements have been made by the Rand Mutual Assurance Co., Ltd., acting on behalf of the Chamber, to render dentally fit, at the expense of the mines, all reduction workers coming in contact with mercury. The Executive Committee has had under consideration certain proposed amendments to the agreement of service of mine employees, the principal amendment being a clause rendering it unnecessary for the companies to recognise cessations of wages. This alteration has become desirable owing to the increased activities of moneylenders, who readily make advances to employees on the security of cessations of wages, much hardship and suffering arising through this practice. The Executive Committee has made strong representations to the Government with a view to facilities being provided for the industrial training of youths returning from active service, who before proceeding on service had not been apprenticed to a trade, and who on their return find that no vacancies for apprentices exist. On several occasions recently difficulties have arisen following attempts by unions to induce mine employees to join these unions—in some cases to compel individuals to leave one union and join another; in others to prevent individuals leaving one union and joining another. The Chamber's attitude in this connection was clearly set out in a statement issued to the Press in March, following a dispute that had arisen at the Knight Central Mine. In that statement it was pointed out that the Chamber has not accepted the position of compulsory Union membership for mine employees, although it has given every assistance and facility towards inducing employees to become members of the unions. So long, however, as an employee is a member of a union catering for the particular class of work on which he is engaged, the Chamber cannot countenance or assist any attempt to force him into another union. When more than one union caters for the same class of work, then in the view of the Chamber the employee should be at liberty to join which of the unions he prefers to join. It is satisfactory to state that the disputes mentioned were not carried to extremes. The action of certain of the unions in declaring May 1st a labour holiday and preventing many of the mine employees from working resulted in considerable loss to the industry. The serious position of many of the mines renders it impossible for the industry to recognise the day as a holiday.

COLLIERIES COMMITTEE OF THE CHAMBER.

In February a scale of war bonus for colliery employees was agreed upon, and came into force as from 1st February, 1919. The scale is on the lines already agreed to by the Chamber for the gold mines, allowing for the difference in the rate of increase in the cost of living in the chief colliery districts compared with the Witwatersrand. The Collieries Executive Committee of the Chamber has had under consideration various demands on behalf of Europeans employed in collieries; these demands are still under discussion with the unions affected.

LOW-GRADE MINES.

On May 9th the President addressed a letter to the Acting Prime Minister, reiterating the warning so often given by the Chamber in regard to the serious position of many mines, and indicating the rapid approach of a crisis in the gold mining industry. Although the letter contained little that had not previously been brought to the notice of the Government, its publication in the Press appears to have at last caused the true position of the industry to be realised. The Government has considered it advisable to still defer action in alleviation of the position until a Commission (which has been appointed) has reported.

SOUTH AFRICAN MINT AND REFINERY.

Following representations by the Chamber, the Union Government has agreed to the principle of establishing a branch of the Royal Mint in South Africa, capable of treating the whole of the South African gold output. In order to expedite the matter, the Chamber has offered to erect and equip the necessary buildings on the Witwatersrand for the Government under certain conditions. The establishment of the Mint and Refinery will be a decided advantage to the gold industry, and, it is thought, will also greatly benefit the community by bringing about a reduction in the cost of living through the favourable effect on the rates of exchange which is likely to ensue when the South African gold output is available in South Africa in the form of sovereigns for disposal to any part of the world.

DISPOSAL OF GOLD PRODUCED.

In December the freight and insurance charges on gold were reduced from 25s. per cent. to 8s. 9d. per cent. From information in the Chamber's possession, it appears that Australian gold producers obtained better prices for their gold during the war than did South African gold producers. Representations have been made to the Government with a view to all producers selling their gold to the Imperial Government receiving equal treatment and also the same price as they would receive if they sold it elsewhere.

INVESTMENT OF BRITISH CAPITAL ABROAD.

The Chamber has made representations to the Government with a view to the removal as soon as possible of the restrictions on the investment of British capital abroad. Under present circumstances shareholders in the United Kingdom are unable to participate in the offer to other shareholders of enemy shares in South African companies without the consent of the Imperial Treasury.

RATES OF EXCHANGE.

During the war the various mining houses entered into an agreement with the banks under which, in consideration of a reduction in the rates for transferring funds from London to Johannesburg, the mining houses undertook to do no outside exchange business. The Chamber has now given intimation of the cancellation of this agreement.

MINERS' PHTHISIS BILL.

A Bill to consolidate and amend the laws dealing with miners' phthisis was introduced by the Government in the House of Assembly, but was subsequently referred to a Select Committee, and a Bill based on the recommendations of the Select Committee has now been passed by the House. The Bill enormously increases the compensation payable by the mines, the new rate being far in excess of any scale of compensation for industrial disease either in this country under the Workmen's Compensation Act or elsewhere in the world. The Bill, which was apparently drafted and agreed to without any proper investigation of its cost, will still further accentuate the crisis in the position of the low-grade mines, besides distinctly tending to increase the incidence of the disease itself.

PROVINCIAL GOLD PROFITS TAX ORDINANCE, 1918.

The test case—Provincial Administration v. New Modderfontein G.M. Co., Ltd.—on the above Ordinance was decided in favour of the Provincial Administration. An appeal has been lodged against the judgment. In spite of the urgent representations of the Chamber and the general condemnation of the taxation of the gold mining industry by the Provincial Administration, the promised Bill to prevent such taxation in the future has not yet been introduced by the Government.

CHAMBER'S SCHOLARSHIP AND GOLD MEDAL.

As a result of examinations held by the Council and Senate of the South African School of Mines and Technology, the Chamber's scholarship and gold medal has been awarded to Mr. E. G. Harding.

AUDITORS' FEES.

The Chamber has been approached by the Transvaal Society of Accountants on the subject of an increase in the fees paid to auditors by the mining houses, the ground for the proposed increase being the increase in the cost of living.

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THE WEEK IN THE SHAREMARKET.

Featureless—Unchanged—Continued Dullness.

ANOTHER featureless market on Saturday. No transactions at the opening and practically unchanged at the call. Prices were generally firm, notably in the Modder stocks. A turn better in Sub Nigels and Van Ryn Deeps and a slackening off in African Farms is about all that can be said. At Monday's call Government Areas were lowered on forced sales. Geduld Props also came weaker. The Modder stocks, Springs, Van Ryn Deeps, Sub Nigels and Crown Diamonds remained firm and unchanged. Business was again limited. The market was dull during the day with a downward tendency. Government Areas fell to 91s. 6d. and Kleinfonteins were weak with sales at 8s. 6d. and sellers. Actual business at the call on Tuesday was reduced to twelve sales. The only important transaction was a deal in one thousand Government Areas at 91s. 6d. This figure has proved low-water mark and very soon the biddings increased until the stock recovered to 93s. The condition of things is such that the purchase or sale of a few hundred shares immediately raises or lowers the price of any particular stock for the time being. The only sale at the opening on Wednesday was one in Modder Easts at 20s. 3d. The call was a repetition of the previous day's performance, only more so. The volume of actual business was still further reduced, and beyond a sale of 100 Modder Bs. at £8 2s. 6d. nothing of importance was recorded. A little more business was put through at Thursday's call, but no transactions of any magnitude. Prices were again practically unchanged. It is generally alleged that the present unsatisfactory condition of the market is due to the unsympathetic attitude of the Government, the possibility of certain mines being closed down, and the general unrest of labour. All these reasons are doubtless correct, but another which has been advanced deserves consideration, and that is: Are the mines being efficiently and economically worked? If report is correct they are not. It is said that for political and philanthropic reasons a large number of the sons of the soil have been engaged in various capacities and that these gentry have brought to the mines the hereditary instinct of watching natives work while drawing full pay for looking on. This statement has been made on what may be deemed competent authority and should be verified without delay. If it be a fact these idlers should be cleared out without delay and make room for better men, as their line of conduct must have a bad effect on the natives. The limit has been more than reached of making the Rand the general milch cow of South Africa, and it is high time that the controllers of the main industry showed a firm front against further spoliation and dry nursing of the rickety, so-called "backbone" of the country. The outside business of the past week consisted of sales of Makganyene Diamonds, 30s.; Monteleo Diamonds, 13s. to 15s.; Compound Diamonds, 4s. and 4s. 1d.; Sakalavas, 7s.; Koodoo Diamonds, 19s. 9d.; Phoenix, 1s. 1d.; Union Tins, 5s.; South-Western Diamonds, 21s. Buyers and sellers; New Farms, 1s. 9d.—1s. 11d.; Koodoo Vendors, 17s. 6d. sellers; Henderson's Options, 10d. buyers.

	Fri. 13th.	Sat. 14th.	Mon. 16th.	Tues. 17th.	Wed. 18th.	Thurs. 19th.
African Farms . . .	15 0	14 6*	14 6*	14 6	14 7*	14 6*
Apex Mines . . .	7 3*	7 3*	7 3*	7 3*	7 3*	7 3*
Bantjes Cons. . .	2 4*	2 4*	2 4*	2 6†	2 4*	2 2*
Brakpan Mines . . .	—	65 0*	67 6	67 0*	67 0	66 0
Brick and Potteries . . .	4 0*	4 0*	—	—	—	4 0*
British South Africa . . .	21 0	21 0	20 3*	20 6*	20 6*	20 0*
Bushveld Tins . . .	1 6	1 3*	1 3*	1 3*	1 3	1 3*
Cinderella Cons. . .	4 6*	4 6*	4 6*	4 6*	—	4 3*
City and Subs. . .	7 0*	7 6*	7 6*	7 0*	6 9*	6 9
City Deeps . . .	55 0†	55 0†	55 0†	55 0†	55 0†	55 0†
Con. Langlaagtes . . .	18 0*	18 0*	18 0*	18 0*	18 0*	18 3†
Con. Main Reefs . . .	9 9*	9 9*	9 9*	9 6*	9 9*	9 9*
Con. Mines Selection . . .	21 0*	22 6	22 0	—	21 0*	—
Coronation Collieries . . .	57 5*	57 6*	60 0	—	—	—
Coronation Freeholds . . .	—	1 10*	1 10*	1 11*	1 11*	—
Coronation Synd. . .	—	2 6*	2 6*	2 6*	2 6*	—

*Buyers. †Sellers. ‡Ex London. §Odd lots.

	Fri. 13th.	Sat. 14th.	Mon. 16th.	Tues. 17th.	Wed. 18th.	Thurs. 19th.
Crown Diamonds . . .	23 9	23 0*	23 9	23 6	23 6*	23 9
Daggafra Mines . . .	22 3	22 3*	22 6	22 0*	22 6†	22 0*
East Rand Coals . . .	2 6*	2 6	2 6	2 6*	2 6*	2 6
East Rand Minings . . .	17 0*	17 0*	17 0*	17 0*	17 0*	—
East Rand Deeps . . .	0 10*	0 11*	0 11*	1 0†	1 0†	1 0†
East Rand Props . . .	6 3†	5 9*	6 2	6 3†	6 3†	5 9*
East Rand Depts. . .	£62*	£62*	£62*	£70†	£62*	£62*
Eastern Golds . . .	1 3†	—	1 0*	1 0*	—	1 0
Ferreira Deeps . . .	—	12 0†	11 0†	11 0†	11 0†	11 0†
Frank Smith Dmds. . .	4 9	4 8	4 7*	4 7*	4 7*	4 8
Geduld Props. . .	46 0	46 6	46 0	45 6*	45 6	45 9
Ginsbergs . . .	—	1 0*	—	1 0*	—	1 7*
Glencarns . . .	—	1 6†	1 0*	1 0*	1 0*	1 0*
Glencoe Collieries . . .	6 0*	—	—	—	—	—
Govt. Areas . . .	95 6*	93 6*	93 0	91 6	92 6	92 6*
Jhb. Bd. of Ex. . .	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters . . .	2 6*	2 6*	—	—	—	—
Klerksdorp Pops. . .	1 2*	—	1 1*	1 2*	1 1*	1 2*
Knight Centrals . . .	6 2*	6 0*	6 0*	6 0*	6 1*	6 0†
Lace Props. . .	17 0*	17 6*	17 0*	18 9†	16 3*	16 0*
Leeuwpoot Tins . . .	24 6*	24 6*	—	24 0	23 9*	23 9*
Luipaardsvlei . . .	—	3 0*	—	3 0*	3 0*	3 0*
Lydenburg Farms . . .	8 6*	8 6*	8 5	8 5*	8 5*	8 4
Middelkyle Estates . . .	—	—	1 1†	1 0	—	—
Modder B's . . .	160 0*	160 0*	160 0*	160 0*	162 6	161 5*
Modder Deeps . . .	157 6*	159 0	158 6	156 3*	158 0*	158 0*
Modder Estates . . .	20 3	20 6	20 4†	20 1‡	20 1‡	20 0
Modder Opts. (3 yrs.) . . .	3 3	3 4*	3 3†	3 3*	3 3	3 0*
Modder Opts. (4 yrs.) . . .	5 0*	5 0*	4 11†	5 0*	4 9*	4 9*
New Era Cons. . .	10 0*	10 0*	9 9*	9 9*	10 0*	10 0
Hume Pipes . . .	24 0*	24 0*	24 6*	24 0*	24 0*	26 0
Natal Navig. Colls. . .	—	—	22 6*	—	22 6*	22 6*
National Banks . . .	300 0*	—	302 6†	—	305 0†	300 0†
New Boksburgs . . .	—	—	—	1 0*	1 0*	—
New Eland Dmds. . .	26 6†	21 0*	—	—	—	—
New Era Cons. . .	10 0*	10 0*	9 9*	9 9*	10 0*	10 0*
New Geduld Deeps . . .	4 9*	4 11	4 9*	4 10	4 10*	4 10
New Healdots . . .	9 6*	8 9*	10 0†	8 6*	8 6*	10 0†
New Kleinfonteins . . .	9 0*	8 9	8 5*	8 4*	8 9	8 6
New Modders . . .	£27 1/2	£27 1/2†	—	£27 1/2	—	£27 1/2
New Unifeds . . .	4 0†	—	—	4 0	4 0†	4 0†
Nigels . . .	—	5 0*	5 0*	5 0*	5 0*	5 0*
Nourse Mines . . .	12 6†	12 0†	12 0†	11 9†	11 6†	11 9†
Premier Deferreds . . .	150 0*	—	150 0*	—	—	150 0*
Premier Preferreds . . .	145 0*	150 0	150 0†	150 0†	—	150 0†
Pretoria Cements . . .	68 6	68 6*	69 0*	69 6	69 6†	68 3
Princess Estates . . .	2 5*	—	2 4*	2 3*	2 3*	2 3*
Rand Collieries . . .	3 0*	3 0*	3 3*	3 3*	3 3*	3 3*
Rand Mines . . .	—	65 0†	65 0†	—	65 0†	—
Rand Nucleus . . .	1 5*	1 6†	1 5*	1 5*	—	1 5*
Rand Select. Corp. . .	78 0†	75 0	—	76 6*	77 6*	77 6*
Randfontein Deeps . . .	4 0	4 3*	4 3*	4 3*	4 9†	4 9†
Randfontein Estates . . .	—	—	16 0†	14 3*	14 9*	14 9*
Roberts Victor . . .	12 0*	11 6*	11 0*	12 0*	12 0*	12 0*
Rooibergs . . .	4 0*	4 1*	4 1*	4 1*	4 1*	4 3*
Ryan Nigels . . .	3 3*	—	3 3*	3 4*	3 3*	3 3*
Shebas . . .	1 6*	—	1 6*	1 6*	1 6*	1 6*
Simmer Deeps . . .	1 3	—	—	1 3*	—	1 3*
S.A. Breweries . . .	35 0†	33 0*	35 0†	30 0*	34 6†	30 0*
S.A. Lands . . .	5 9*	5 9	5 9	5 9	5 9*	5 9*
Springs Mines . . .	48 3*	48 9	48 6	48 0	48 1‡	48 0
Sub Nigels . . .	19 6*	20 0*	20 6*	20 0*	20 3	20 3*
Swaziland Tins . . .	13 9*	13 6†	18 6†	19 0†	19 0†	19 0†
Trans. Con. Lands . . .	26 0*	27 0*	27 6*	27 0*	26 0*	27 0*
Trans. G.M. Estates . . .	13 3*	—	13 3*	14 0†	—	—
Van Ryn Deeps . . .	69 9	70 0*	70 0*	69 6*	69 6*	70 3
Van Dyks . . .	2 6†	2 0†	2 9†	2 6†	—	2 6†
Villago Deeps . . .	11 9*	12 0*	10 0*	—	—	10 0*
West Rand Cons. . .	—	2 6*	2 6*	2 8*	2 8*	2 8*
Western Rand Est. . .	2 3*	2 3*	2 3*	2 3*	2 3*	2 3*
Witwatersrands . . .	16 6*	17 0*	17 0*	17 0*	17 0*	17 0*
Wit. Deeps . . .	—	12 6*	12 6*	12 6*	12 6*	12 6*
Wit. Townships . . .	24 0†	—	—	25 0*	26 0*	26 0*
Wolbaters . . .	2 1*	2 0*	2 1*	2 1*	2 1*	2 3
Zaaplaats Tins . . .	10 0†	9 4*	9 3*	9 5*	9 7*	9 3*
New State Areas . . .	24 10	24 3	24 0	23 6	24 6	24 6†
South Van Ryns . . .	8 9*	9 0	9 0*	9 0*	9 0*	9 3
S.A. Alkali . . .	17 6*	15 6*	14 0*	14 0*	15 0*	15 6†
Twofontein Colls. . .	—	22 6*	22 6*	22 6*	22 6*	22 6*
Do. Prefrs. . .	23 0*	—	—	—	—	—
West Springs . . .	22 6	22 3	—	22 0*	22 3	22 3
Union 5 Per Cent . . .	13th, £102 15s.*; 14th, £102 17s. 6d.; 16th, £160 15s.*; 17th, £102 17s. 6d.*; 18th, £100 5s.*; 19th, £102 12s. 6d.*					

*Buyers. †Sellers. ‡Ex London. §Odd lots.

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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The East Rand Reef Controversy.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Your article in the current issue *re* Johannesburg and the Van Ryn Reef. May I add a little to the heterodox geologists? The orthodox school tell us that the basic rock in this country is granite, and on this lie the various formations. First, let us take the quartzite shales, which the orthodox school says belongs to the anti-Devonian Age and correlates with the Swaziland system. Let us agree with them so far. Now, let us remember that before cementation set in these rocks would be porous and would allow all water to filter through, and would carry along with it all the smaller pebbles, rounding them off into their present shape as pressure increased. Let us accept for a moment a theory of "deposition," or infiltration from above. This easily accounts for the gold content in the conglomerate. Our orthodox school will not have this, but at the same time they will tell us that the authigenic constituents of the banket such as "pyrites," etc., filtered through after the gold was in position, because they tell us that in some cases pyrites replaced the quartz crystals. If infiltration is acceptable for "authigenic constituents," surely it is also acceptable for allogenic constituents. Now, let us get to Mr. Bleloch's theory. He set out to find where the Main Reef had its southern horizon, and found a reef which correlated with our gold bearer, the so-called Van Ryn Reef, proving conclusively that this reef is continuous throughout the whole Witwatersrand syncline, but Mr. Bleloch also found two more reefs carrying good values and outcropping south, and as one reef has been proved continuous, why not three? And these other two Mr. Bleloch places north of our Main Reef. This is quite feasible. Why? Because we know the ridge above Parktown, extending to the north of Benoni, is the watershed of the country and approximately the granite line. Therefore we are entitled to look for gold anywhere north of our present Main Reef up to that granite, and I would point out that at the old Geldenhuis Estate Mine the reef is almost on the ridge, whereas at the Ferreira it is two miles away, allowing room for not two reefs but twenty. Further, let me point out that in the majority of metal mines, if you lose the lode it is customary to go on until one strikes granite. Some six years or so ago, Mr. Bleloch's antagonist, Dr. Mellor, was interested in boring at Boksburg North in an attempt to correlate the Van Ryn Estates and Rietfontein Reefs—with what result? They discovered a reef, two inches wide, which was designated as the Pullan Reef, and nothing further was done. Twelve months ago the Gold Fields put down boreholes on the Southern Van Ryn property, and on the strength of a shale contact only were prepared to embark on a huge vertical shaft sinking programme, whereas at Boksburg North, on a two-inch indication, nothing was done, and in just the place where the Nigel Reef would be expected to appear. Why? Because the orthodox school says there is nothing to be looked for north of the Main Reef series. Let me tell you, Mr. Editor, that I have before me a sample of reef, 60 inches wide, taken between the Main Reef and Du Preez Reef series, that is 2,000 yards north of the Main Reef. Let us go further east. Then we wonder why the Van Ryn Deep does not look for two reefs, seeing it is in such close proximity to the Kleinfontein and Van Ryn Estates, both outcrop mines on different reefs. In conclusion, let me ask Mr. Bleloch to give us a short dissertation on his geological theories through the medium of your paper, and instead of trying to convince people who are antagonistic to him, let him convince the proletariat. I would point out that 2,000 shares of £50 each would be sufficient capital to open up another of his Nigel properties,

which would be a better argument than all the Corner House meetings. Why doesn't he float a concern on the instalment principle and give the working man a chance?—Yours, etc.,

MINER.

June 16th, 1919.

The Plight of the Poor Investor.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—The favourite cry of people like the Nationalists in the Provincial Council, who are frankly out to plunder the mines and who imagine that the ruin of the mining industry will not react on their country constituencies and also of our friends the Socialistic element of the Labour Party, is frankly, tax the "exorbitant" profits of the richer mines. Last week one of the Nationalist speakers in the Provincial Council in Pretoria stated that there were mines paying 40 per cent. I should like to remind him that, except to a very small percentage of investors who have held their shares from the start of the mine, perhaps keeping them years without getting any interest at all, there is no mine on the Rand paying more than 8 per cent. real interest when replacement of money invested during the life of the mine has to be allowed for. The majority of the shareholders in these rich mines have put their hard-earned money into these mines on that basis. I see also in this day's paper that a hopeful gentleman—President of the Guild Socialistic League—thinks that the way to carry on the mining industry is to run it without hope of profit (except, of course, to his brother "Guildites") and make the rich mine pay to keep the poor ones going. Does the gentleman really think we are so far advanced that the golden age is in sight and that he can eliminate from the nature of man the love of a gamble on the hope of "unearned increment"? Has he asked himself how, if the hope of gain is eliminated, mining is going to flourish and the huge sums of capital required are to be obtained? The Boer farmer sits down safely in the shade of his fig tree, with a rifle over his mantlesheff, certain that if his cow has a calf no one will appropriate it on such grounds. It seems time that poor investors like myself should ask why he cannot be allowed to treasure his piece of often worthless scrip without the fear that various sorts of thieves will not rob him of his "unearned" dividend if it does come along. Yours, etc.,

"POOR INVESTOR."

June 16th, 1919.

Rand Geology.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Kindly allow me to agree with you in saying in your last issue "that those who attended the annual meeting of the East Rand Proprietary Mines should feel under an obligation to Mr. William Bleloch for his spirited speech" in drawing attention to the fact that in the eastern part of the property they are not working on Main Reef series. Main Reef series is on their dip and runs through the top portion of the Boksburg dam, as I have always contended, and should have been cut, bar dykes and disturbance, by the Cinderella Deep shaft at 2,300 odd feet, for the reason that the shaft was started on the Bird Reef series, and *not* the Kimberley series as the so-called orthodox geologists state. Main Reef series is never more than 700 to 800 yards from Bird Reef series in a section such as that

—vide the English and Tracey borehole of the early days, with the same dip. In Rand stratigraphy, after Main Reef series comes Blue Sky series to the north, which they are now working on, and which we have here in the Market Square. Underlying that, as night follows day, comes the Van Ryn or Nigel series in Von Brandis Square. Out east it is in De Bells' claims and under Boksburg North, never mind whether it outcrops or not, for that's quite a detail in stratigraphy. The only trouble is that when engineers or orthodox geologists put down boreholes in covered country underlying Main Reef series they will put them down vertically instead of at an angle, for who is to know that the formation may not be thrust to the vertical in interbedded shale country—planes of least resistance for igneous rock to have play! I don't think, Sir, you need worry about demolishing Johannesburg just yet to get at the gold thereunder, as there is plenty of open ground east and west belonging to Main Reef companies for the groups to experiment on, at nominal cost, and put the orthodox crowd to shame. Many years ago a syndicate in which I was interested pegged what is now "Jeppes Extension" to work the Blue Sky series and drill for the dip of the Van Ryn over the hill, but a stronger syndicate wanted to make a township of it, so the learned men of the Geological Survey (who knew nothing of the Rand) were called over from Pretoria to decide, and they gave it in favour of the township, declaring that there could not be anything payable north of Main Reef series—this is their theory to-day, worse luck for Johannesburg and the Government alike. For scores of reasons I could give and have given you from time to time, the Geological Survey will have to be revised and re-written from scratch, but that will not help us in the present. For instance, what have they to say to this "Composite Reef" suddenly discovered on the E.R.P.M., and how does it lie in relation to Dr. Mellor's Main Reef Leader with a shale footwall in that company? I know of a reef in the Free State and elsewhere underlying the Blue Sky with a shale footwall, going 8 to 10 dwts. over 18 inches—is it that perhaps, more highly auriferous there? The Rand can well do with the unearthing of a few more payable reefs, hence why should anything to its benefit be kept secret, as it were. —Yours, etc.,

SCOTT ALEXANDER,

"Rand Stratigraphist."

Johannesburg,

June 18th, 1919.

Machinery for Making Matting.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—With reference to Mr. M. Finch's letter in your issue of the 31st ult., making enquiries regarding a firm or agent in South Africa who can supply machinery for the manufacture of coir and coconut matting, I believe Messrs. S. Sykes & Co., Ltd., Box 2303, Johannesburg, represent a firm who manufacture this class of machinery.—Yours, etc.,

RETURNED SOLDIER.

ASBESTOS—LEAD.

Advertiser has good asbestos and lead claims in Northern Transvaal, which require development. Interested parties should communicate with

E. STUART,

c/o office of this paper.

Treasury Restrictions.

Geduld and Modder Deep Enemy Shares.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Re "Vested enemy shares purchased from the Custodian of Enemy Property." Referring to the circulars issued to South African shareholders of the Geduld Proprietary Mines, Ltd., and the Modderfontein Deep Levels, Ltd., on the 7th May last, we are directed to inform you that cable advices have now been received that the Imperial Treasury and the French Minister of Finance have granted permission for offers of purchased enemy shares to be made to shareholders resident in the United Kingdom and France respectively. Circulars have accordingly been issued to such shareholders making similar offers to those already made to South African shareholders.—Yours, etc.,

UNION CORPORATION, LTD., Secretaries,

per C. J. CHALMERS.

Johannesburg,
18th June, 1919.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Anxiety re Poorer Grade Mines—Government's Remedies—Property Market Just Beginning to Feel the Pinch—Timber and Building Materials—Oils and Colours—Electrical Goods—American Trade and Shipping—Iron, Steel and Hardware.

THE anxiety and intermittent discussions in Parliament have had a very unsettling effect on trade conditions throughout Johannesburg and along the Reef. Up to a certain point it did not seriously affect trade, but during the past fortnight when it seemed that the Government would prorogue Parliament without a statement of their intentions, people became very much concerned as to our future. For example, last week was almost a record for bad business on the Commercial Exchange. It was also noticed practically for the first time for twelve months or so, that a hesitating feeling manifested itself in the property market, which has been further intensified this week. Naturally in a place like Johannesburg business is always doing in the property market, but during the period mentioned enquiries have not been so persistent (excepting for renting houses) and the biddings at auction sales have been less free. It is not surprising if a little lull occurs after such an excellent market, but at the moment the two prominent reasons are the ultimate decision about the lower-grade mines and the signing of peace. One feature for stability is General Botha's cable warning South Africans not to visit Britain, as there was no guarantee about return shipping and people may be landed on that side for a twelve month or so awaiting a return passage. Hence passengers from here may defer their departure and so give no relief to the crisis as regards obtaining available houses. Another bright augury is the speech made by the Acting Prime Minister. He said that the seriousness of the possibility of the mines closing down was fully realised by the Government, who were most sympathetic. He also referred to three ways of assisting these mines. The first was to improve the working conditions, and it was their intention that the strong representative Commission will be looked upon as an active Advisory Board with a view to achieving practical results to see what could be done to continue the working of the lower-grade mines. The second way was to secure better value for the gold through the mint and refining the metal, which was calculated to save £500,000 to the industry. The third plan was relief by establishing other industries in the country. The question of alternative industries for South Africa was engaging the attention of men with money more and more, and hopes were entertained that new things were on the point of being started to assist in overcoming the difficulties when some of the mines closed down in the natural course of events. This is something, and the sooner such mines are dealt with and either propped up or closed down the better for the commercial community, which will then be compelled, out of necessity, to trim their sails accordingly.

TIMBER AND BUILDING MATERIAL.

There is still a further slight advance in Baltic timber, as deals are 1s. 6½d. to 1s. 7½d.; floorings, 8½d. to 8¾d.; and ceilings, 6d. to 6½d. per foot. This improvement is chiefly in consequence of the great demand in Johannesburg and Reef since the building strike was over, and again, the speculators' stocks at the coast are being pretty well absorbed. Importers are reticent about stocks on the way, but these seem to be on the meagre side, therefore on the whole position it indicates that prices are likely to advance,

especially when peace is signed. At a meeting of a building society, Mr. Thomas Douglas, the chairman, said there was nothing to indicate that there would be any substantial decrease in the cost of building for at least two years to come. As regards galvanised roofing iron, there is also a slight advance through the increased consumption. The price is 1s. 3d. to 1s. 5d. per foot for 24 gauge, according to length, and 1s. 1d. all round for 26 gauge. A feature in modern residences is the prominence of leaded lights and stained glass windows, the majority of which are being manufactured in Johannesburg. It is also surprising what good use the architects are making of the great variety of domestic and ecclesiastical designs available for working into the buildings. They have also done much in using South African woods, more especially the Rhodesian varieties for panellings, embellishments and decorations throughout up-to-date residences.

Bricks.—Prices remain about the same. Labour—plasterers, bricklayers and painters—is still very scarce. The demand for bricks is very good and there are several big buildings starting in Johannesburg. Prices ruling are: Stock bricks, 50s. to 60s.; wire cut, 80s. to 90s.; pressed bricks, 85s. to 95s.; blue lime, 4s. 6d.; plaster, 5s. 6d.

SECOND-HAND TIMBER AND IRON.

There has been no appreciable change in prices during the week in second-hand dealings, and although the demand still continues good materials are very scarce. Deals are selling (as far as stocks on hand will permit) at 1s. 2d., and iron at 10d. A little second-hand timber and iron is expected on the market shortly, but in no great quantity, unlike the old days when large stocks could always be counted upon.

OILS AND COLOURS.

The English market is rising. Linseed oil there is 8s. 5d. per gallon, plus the cost of 5-gallon drums at 5s. 10d. each, making it 9s. 7d. gross before leaving London. The price

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OSBORN'S STEEL.

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of the empty drum in Johannesburg is only 1s. 6d. White lead in England is £58½ per ton. Turps are 65s. two-fours, and 72s. 6d. ten-ones. Whilst the white lead and linseed oil market is steadier yet it seems that speculative stocks come out from somewhere when big orders come into the market. The idea is that speculative stocks will not disappear from Johannesburg and the coast until the end of this year and may be even longer. The excess stocks referred to are chiefly glue, caustic soda, linseed oil and white lead. Business remains quite good in the oil, colour and paint trade.

ELECTRICAL GOODS.

This week there is very little to report in electrical trading. Business is still quiet in the absence of the all-important tubing, which is practically unobtainable in Johannesburg. This refers to not one particular size but all sizes of tubing, and it is generally supposed that the manufacturers are still unable to get the requisite steel supplies, without which it is impossible to make tubing. However, we are advised that by the "Moravian" over 500,000 feet have arrived at the coast, and it is expected will arrive here in about a week or ten days, when business should take a turn for the better, enabling contractors, who ever since the cessation of the strike have been handicapped by want of the necessary materials, to get into their stride again in the matter of completing the installations now at a standstill in the numerous buildings in course of erection. As mentioned before, wiring and other materials are plentiful, and it is generally thought that from, say, the beginning of next month prices, including lamps, will rule a little easier. Country business is very good indeed and is giving a filip to town business which otherwise dealers would find very dull.

AMERICAN TRADE AND SHIPPING.

Shipping has been ample of late from America and Canada, and nearly all the old orders have been finished. A great feature in connection with these old orders is that one of the big indenting houses has arranged for considerable rebates or discounts for orders placed at top prices. Some of these being as much as 27½ per cent. Most of these orders were placed before the armistice and manufactured after that event, when lower prices came into operation. The allowances were made in consequence, although the rule was to obtain payment or guarantees in advance, and obviously also under very binding contracts, hence South African merchants are very fortunate, although it may mean a certain tacit understanding in reference to future business, but not of necessity. Orders are being again sent to America for barbed wire, fencing material, wire nails, and in smaller degree for mine tramway material. According to a coast correspondent there are quantities of piping and odds and ends, as well as out sizes of material awaiting orders from inland centres for clearances. Therefore in this respect

there are bargains to be picked up owing to non-deliveries and so forth.

IRON, STEEL AND HARDWARE.

The local manufactured iron and steel is still much in demand throughout South Africa, and at the recently lowered prices it undercuts the imported article for ordinary work. Imported mild steel is 45s. per 100 lbs., as against 35s. for the Transvaal make. Sheffield drill steel is 10d. lb. Wire nails from merchant to retailer are for 1½ in., 52s. 6d.; 2 in., 50s.; 3 in., 47s. 6d.; 4 in., 45s.; 5 in. and 6 in., 40s. per 100 lbs. In America copper on April 1st, 1919, was 15½ cents per lb., while six months ago the price was 26 cents per lb., as compared with 13 cents in August, 1914. Owing to the decreased price of copper several large mines in America have ceased operations on account of the large increase in the cost of labour and supplies.

REVIEWS.

"The Mica Miner's and Prospector's Guide," by Archibald A. C. Dickson, A.I.M.M., F.G.S., Etc. London, E. and F. N. Spon, Ltd., 57, Haymarket, S.W.1.

This little book serves a useful purpose in directing attention to the Micaceous Deposits of India, and deals at some length with the mode of occurrence, methods of mining and prospecting, etc. The author, in his preface, says: "As the Government need very much larger quantities of mica than they are getting to-day from the mica fields of the country, and as this shortness is due not so much to want of good mica deposits as to the ignorance prevailing with regard to the true nature of the deposits, their depths, forms of occurrence, and general characteristics with regard to continuity, simplest forms of prospecting, and many other points that go a long way to increasing general output with minimum of risk, the author hopes that the information given will be of help to those earnest searchers for mica who have been groping in the dark and who want specific information as occurring and observed on the surface and in the mines from day to day for some continued period, together with a detailed description of what has actually been done in mica mining locally, which is the only way of ascertaining the true nature of the deposits and of helping on the industry."

The mines described are in the Kodarna Mica Field, and a Hindustani Glossary is found at the end of the book. The author's descriptions of the mica occurrences and the means of working them are clear and concise, but the value of the book is somewhat diminished by the fact that the text deals only with the Indian Mica Fields and not with deposits in other parts of the world.

SWAZILAND TIN, LIMITED.

(Incorporated in the Transvaal.)

DIVIDEND No. 24.

NOTICE IS HEREBY GIVEN that Dividend No. 24, of Five per cent. (1s. per share), has been declared by the Board, payable to all Shareholders registered in the Books of the Company at the close of business on the 30th day of June, 1919.

The Share Transfer Books will be closed from the 1st day of July to the 7th day of July, 1919, both days inclusive.

The Dividend Warrants will be posted to Shareholders from the Head Transfer Office on or about the 17th day of July, 1919.

By Order of the Board,

TRANSVAAL CONSOLIDATED LAND AND EXPLORATION
CO., LTD., Secretaries.

Per C. L. READ,

Head Office: The Corner House,
Johannesburg, 18th June, 1919

The Cassel Coal Company, LIMITED.

(Incorporated in the Transvaal.)

Declaration of Dividend No. 17.

NOTICE IS HEREBY GIVEN that an Interim Dividend (No. 17) of 5 per cent., equal to 1s. per share, has been Declared, payable to all Shareholders registered in the books of the Company at the close of business on Monday, the 30th day of June, 1919.

By order of the Board,

T. L. DAY, Secretary

Lace Building,

74, Fox Street, Johannesburg,

17th June, 1919

Company Meetings.

CROWN MINES.

In moving the adoption of the report of the directors and the statement of accounts at the annual meeting of shareholders in the Crown Mines, Ltd., on June 18, the chairman (Mr. Samuel Evans) said:—Briefly, the results of the year were:—The revenue from the sale of gold was £2,528,759 16s., and from other sources £40,898 15s. 10d., a total of £2,569,658 11s. 10d. The working costs amounted to £2,118,117 12s. 8d., and other disbursements to £274,058 12s. 8d., including interest on and redemption of debentures, amount spent on capital account, Government taxes, etc., bringing the total expenditure during the year up to £2,392,176 5s. 4d. The working profit amounted to £410,642 3s. 4d., and the nett balance of revenue over expenditure to £177,482 6s. 6d., which, added to the £359,235 12s. 9d. unappropriated at the end of 1917, makes a total of £536,717 19s. 3d. £188,021 4s. was distributed in dividends, so that we had in hand unappropriated at the end of the year £348,696 15s. 3d. How the latter amount is made up is shown in detail in the directors' report. You will observe that the value of stores and material on hand and in transit at the end of last year accounts for £238,842, as compared with £43,041 at the end of 1913, or an increase of £195,801. Of this increase £105,758 is due to higher prices, and £90,043 to additional quantities. The value of stores and material on hand and in transit at the end of last year on the basis of the prices prevailing in December, 1913, was about £133,084, whilst the stores and material on hand and in transit at the end of 1913 would have been worth about £76,770 on the basis of the prices prevailing in December last. That is, there is an average increase in the prices of our stores and material of 78 per cent., as compared with over 130 per cent., the increase in the prices of commodities in England. Owing to the existing inflated state of European currencies it is impossible to foretell the extent to which the amount of money invested in stores and material can be reduced as the result of lower prices, but it is certain that in time, under normal Peace conditions, it will be possible to reduce substantially the quantities of stores and material kept in stock. I may mention that of the stores and material consumed on the Crown Mines in 1918 about 70 per cent. were of South African production and 30 per cent. imported. The essential features of last year's operations compare with those of 1917 as follows:—

	1917	1918.
Footage developed	36,090	30,254
Tons mined	2,287,623	2,054,451
	£	£
Value of yield	2,700,096	2,528,760
Working expenses	2,026,130	2,118,118
Profit	673,966	410,642
Dividends paid	376,042	188,021

As you will see, there are decreases under every head, excepting expenses, and although the tonnage mined is down 233,172 tons there is an increase of £91,988 in the working expenses.

Yield Per Ton.

The table attached to the annual report which summarises the results of last year and previous years shows that the yield per ton has remained fairly constant since 1914. As I pointed out at our last meeting, the disappointing results of recent years are not due to

poorer ore, but to two main factors which are beyond the control of the management, namely, increases in costs occasioned by the war, and the shortage and fluctuating character of our native labour supply. The increasing depth at which the ore has to be stoped is no doubt also a consideration. Last year the position was aggravated by the abnormal floods with which we had to cope in the first quarter, and the influenza epidemic which seriously affected our output from the end of September onwards. Compared with 1917, a part of the increase in costs last year appears to be due to a decrease in the efficiency of our labour force. The average number of men at work during the year was almost the same as in 1917, but there was a fall in the tonnage mined of 10.2 per cent. There was also a decrease in the quantity of development done of 5,836 feet, or 16 per cent. Up to 1915 the war had had comparatively little influence on the working of these mines. Compared with that year the output per European underground employed last year showed a decrease of 72.9 tons, or 24.8 per cent., whilst the fall in the output per underground native was 22 tons, or 9.6 per cent. It has also to be remembered that there was an increase in the quantity of ore broken in the mine at the end of last year as compared with the position at the end of 1915 and 1917. However, after making every allowance, it appears clear that the labour employed was on the whole less efficient last year than in previous years. It is to be hoped that we shall see an improvement in the near future as the result of the demobilisation and return of the skilled and experienced men who left us in order to help to win the war.

The working costs last year were 6s. 9d. per ton, or 42 per cent. higher than the average costs of the two years 1913 and 1914. Of this increase, about 5s. is directly attributable to the war. We spent last year £455,868 under the following heads: Increased cost of mine supplies, £276,000; war bonuses and increases in the wages of European employees, £132,815; increased gold realisation charges, £29,159; allowances to employees on active service, £17,894. Total, £455,868. At our last meeting I stated that the increases in costs which were directly attributable to the abnormal conditions arising out of the war, totalled from August 1st, 1914, up to the end of May, 1918, £847,369. With the addition of the expenditure under these heads up to the end of December, 1918, the burden directly traceable to the war is brought up to £1,140,888, equal to over 121 per cent. of our issued capital. Up to the present, the cessation of hostilities has not appreciably helped the industry as far as working costs are concerned.

Ore Reserves.

I propose now to refer to the position of our ore reserves. The development accomplished last year was 30,254 feet, or 5,836 feet less than in 1917. Besides the shortage and extreme fluctuation of our native labour force, the flooding of the lower portions of the mine in the early part of the year materially impeded and restricted development operations. You will note that we had at the end of the year £35,000 to the credit of the

Development Suspense Account, and we have at present £45,990. This money has been set aside to make good when labour is forthcoming the development necessary to enable us to maintain the level of our ore reserves. During 1918, 1,575,318 tons of ore, having an average value of 6.33 dwts., over 60 inches was exposed, and of this 1,343,163 tons have been classed as payable, having an average value of 6.81 dwts., over 59.4 inches; and 232,150 tons, with a value of 3.56 dwts., over 63.9 inches, have been set aside as unpayable under existing conditions. The tonnage mined out of the ore reserves last year totalled 1,344,454, or 41,286 tons more than the quantity of payable ore added to the reserves. The re-calculation of the payable reserves at the end of December last showed 8,298,100 tons, of an average assay value of 6.4 dwts., over a stoping width of 64.4 inches. The estimated tonnage was 689,900 tons less, and the assay value slightly better than the corresponding figures at the end of 1917. The decrease in the tonnage is due chiefly to a reduction of three inches made in the stoping width when re-calculating the ore reserves. Ever since the amalgamation the yield per ton of the mine has been favourably affected by the rich ore stoped from the upper levels in the eastern section. However, the fact that the Robinson Central Deep ground has now practically been worked out, it is not likely to influence the average value of the ore reserves to any alarming extent. You will note that 64.7 per cent. of the payable ore reserves at the end of 1918 was below the 13th level, or at a greater depth than 2,000 feet. As you will gather from the Consulting Engineer's Report, in the lower levels north of the dyke the south reef has been distinctly patchy, but on the whole the reef disclosures in the development accomplished so far this year have been quite satisfactory, particularly in the levels east and west of No. 7 Shaft.

Southern Ground.

The development of our southern ground is being steadily pursued. At the end of last month No. 15 shaft had reached a depth of 1,875 feet, and the sinking of 5a shaft is being pushed ahead. Preparation is also being made to sink 14a shaft. In this connection I might mention that the world's record for shaft-sinking has been twice broken on the Crown Mines, namely, in the sinking of No. 14 shaft, when 252 feet were sunk in the month of September, 1916, and in the sinking of No. 13 shaft, when 279 feet were sunk last December. For this double record our master sinker, Mr. Ivor Rees, deserves our hearty congratulations. The reef exposures in the ground that is being opened up in the 19th level cross-cut from No. 7 shaft south of the South Rand dyke are most encouraging as regards both the Main Reef Leader and the South Reef. The Main Reef Leader was intersected in November last and the South Reef in January this year, and the sampling confirms the satisfactory results obtained in a borehole put down from the 16th level in order to locate the reef south of the South Rand Dyke. The distance from the point where the reef was intersected in the 19th level crosscut and where it was struck in the borehole is 180 feet.

so we may reasonably conclude that we have in the centre of the property at a depth of 3,250 feet vertical a fairly large block of ground carrying good ore.

Health of Employees.

We continue to devote the closest attention to the health and safety of our employees. Owing chiefly to the influenza epidemic, the results last year were less satisfactory than in 1917. The mortality from disease amongst our white employees was 13.1 per thousand, as compared with 3.4 per thousand in the previous year. The native death rate from disease was 16.3 per thousand, or rather more than double the 1917 figure. Of 206 deaths amongst our native employees 96 were due to influenza. Tuberculosis continues the gravest of our health problems. It accounted for 49 of the 110 deaths from diseases other than influenza. The mortality last year owing to accident was, amongst our white employees, 3.4 per thousand as compared with 4.6 per thousand in 1917 and 5.0 per thousand as compared with 4.6 per thousand in 1917 and 5.0 per thousand in 1916. The accident death rate amongst our native employees was 1.9 per thousand last year, as against 1.98 in 1917 and 3.95 in 1916.

It is hardly necessary for me to express our deep satisfaction at the victorious termination of hostilities and our pride at the fact that altogether 643 Crown Mines' employees have been on active service. At the end of last month there were 98 of our men with the forces, the allowance to whom by the company last month totalled £772 13s. 10d. According to information available, of the Crown Mines' employees who enlisted 44 received commissions, and eight earned the following honours: Military Cross, 4; Military Medal, 1; D.C.M., 2; Croix de Guerre, 1. The casualties amongst our men reported up to the end of the year were: Killed or died on active service, 49; wounded on active service, 31; total 71. The names of those who died on active service last year are mentioned in the general manager's report, and I am glad to say that no further deaths have been reported. It is, I am sure, your wish that we should extend our sincerest sympathies to the bereaved families.

Notwithstanding the fact that the grade was better than in the years 1914 and 1915, the profit had fallen from £102,940 per month in 1914 and £112,926 per month in 1915 to £31,681 per month this year. Per ton mined the decrease had been from 9s. 8d. and 9s. 3 3/4d. to 3s. 6d. Although they had mined this year an average of 32,000 tons per month less than in 1914 their working costs showed an increase of £42,500 per month. White wages, stores, and other costs (which include leave pay and allowances to employees on active service) accounted for most of the increase. As regarded these three items last month's figures compare with those of the corresponding month last year, and in 1914 and 1915 as follows:—

May.	Per ton mined.		
	White Wages.	Stores.	Other Costs.
1914	3s. 11.3d.	4s. 8.1d.	2s. 9.2d.
1915	3s. 8d.	4s. 9.7d.	2s. 11.8d.
1918	6s. 0d.	7s. 1.3d.	4s. 1.3d.
1919	6s. 7d.	7s. 4.6d.	4s. 2.7d.

The increases in wages and stores were due almost entirely to the unparalleled rise that had taken place in prices and the consequent depreciation in the value of money when measured in commodities. As a result gold mines,

not only in South Africa, but all over the world, had suffered. The fall in the profits of the gold mining industry was universal. They had perhaps suffered less in South Africa from the rise in the prices of commodities than gold mines in some other parts of the world. The native wages had remained practically unchanged, and it appeared that food had increased less in price here than in most other gold mining centres. Mealie meal and meat to feed their natives cost them respectively 33 per cent. and 40 per cent. more per unit last year than in 1914. In Australia the rise in prices appeared to be about the same as in South Africa. The prices of commodities had been going up prior to the war, but the increase that had taken place since July, 1914, was unprecedented. The alteration in the general level of prices in England since the Rand had become an important gold producer was brought out very clearly in a table based on "The Economist" and "The Statist" index numbers, which showed that in England in July, 1914, it required £132 to £135 in English currency to buy what was purchasable for £100 in 1896; and at the end of last year it required £238 to £239 to acquire commodities which could have been got for £100 when the war commenced. Compared with 1896 the change was striking; then, 6s. 4d. had the same purchasing power in England as 20s. had at the end of last year. There had been slight decreases in prices since December last, but nothing appreciable. It must be remembered that "The Economist" "The Statist" index numbers referred to the wholesale prices of commodities in England. The increase in prices on the Continent of Europe had been considerably greater whilst the increases in the United States and Canada were less than in England, but much higher than in South Africa and Australia.

Cause of Industrial Unrest.

There were several factors which had adversely affected their operations, but the main cause of the decrease that had occurred in their profits and in those of the gold mining industry elsewhere was undoubtedly the increase that had taken place since 1914 in the prices of commodities necessitating an increase in the wages of their European employees and a heavier expenditure on stores and materials. The rise in prices was probably the root cause of the present world-wide industrial unrest; and the fact that during the war the Chamber of Mines had always been ready to consider and adjust promptly claims for better pay based on the higher cost of living was no doubt the reason why the relations between capital and labour on the Rand had been more harmonious than in a great many other parts of the world. In the opinion of leading economists the rise in prices had been brought about chiefly by the undue expansion of credit and the inflation of the currency through the unlimited issue of inconvertible paper money, which, among other things, had resulted in the practical abandonment for the time being of the gold standard by the British Government. Their future would therefore depend in no small measure on the currency policy adopted by the British and other Governments, and it was some satisfaction to note that there was a consensus of opinion among authorities in England in favour of the restoration as soon as possible of an effective gold standard. He had no doubt that the adoption of the recommendations of the two committees appointed by the Imperial Government and other authorities on the currency

problem in favour of the restoration without delay of an effective gold standard, involving, as it did, a free international market in gold, would lead to a substantial improvement in the position of the gold mining industry here and elsewhere, as gold was now at a premium in a great many countries, whilst the annual output was considerably less than it was four years ago. In a letter he (Mr. Evans) received in February last from a leading firm of bullion brokers in Bombay it was stated that in India gold was at a premium of between 30 and 40 per cent. "The Times" (London) recently announced that a shipment of Australian gold to China had realised just over 15 per cent. above the Mint value. The restrictions which the British and other Governments had placed on the movement of gold has had a contrary effect to that which was intended; it had encouraged hoarding and stimulated a desire for gold, particularly among Eastern races. It would be remembered that two months ago the Chancellor of the Exchequer stated that there was nothing in the Report of Lord Inchcape's Committee on gold production to suggest that producers of gold were not entitled to obtain for their produce the best price available in the most favourable market, and that he was considering in what manner that could be best secured. On the whole, it appeared to him that the outlook was promising, and that the time could not be far distant when they would be in a position to dispose of their gold on terms much better than those which had recently prevailed.

Realisation of Bullion.

There was one direction in which the war has imposed heavier burdens on this industry than on gold mines in other parts of the Empire. They had had to meet an additional expenditure in connection with the realisation of their bullion and which did not fall on Australian and Canadian gold producers. It appeared now that not only that expenditure but a great deal more would have been saved had provision been made for refining and minting their bullion here. In 1901, Lord Milner wrote to the Colonial Office recommending the establishment of a Mint in the Transvaal. In reply the Colonial Office transmitted Minutes from the Imperial Treasury and the Deputy-Master of the Royal Mint intimating that the site and buildings of the old Transvaal Mint in Pretoria were unsuitable, but that if the Transvaal Government were prepared to go to the expense of providing a more adequate site and buildings and to make the necessary financial arrangements for the annual expenditure no objection would be offered to the establishment in South Africa of a branch of the Royal Mint. Unfortunately, nothing was done. After detailing the figures of the cost of disposing of the Crown Mines output, he continued to say that at the Ottawa branch of the Royal Mint, in the case of deposits exceeding 500 ounces, the charge for assaying, refining and coining was 3 1/2 cents, or 1.875d. per ounce of bullion; the gold was accounted for at 77s. 10 1/2d. per standard ounce and the silver obtained from the deposit was paid for at the New York market price less 1/4d. per ounce. That was there was a difference between the Ottawa Mint tariff and what it was actually costing the Crown Mines to dispose of the gold of—

Prior to the war, 11.125d. per ounce of bullion;

During the war, 1s. 6.825d. per ounce of bullion;

At present, 11.575d. per ounce of bullion.

Since the amalgamation, the Crown Mines had paid for marketing its bullion £452,964 more than it would have had to pay had there been a refinery and Mint here operating on the same conditions as the Ottawa branch of the Royal Mint. During the period of the war a refinery and Mint on the Rand would have saved the Crown Mines about £5,000 a month. In the past the view has been that there would be little advantage in having a local branch of the Royal Mint as the coinage requirements of South Africa were small and the export of the surplus output of the Mint would involve an expenditure not much less than that which the mining companies had to incur in sending their bullion to London. The experience of Australia showed that that view was not well founded. The export of the surplus output of the Australian Mints had cost nothing, either to the gold producers or to the public in Australia. That was the conclusion arrived at by the Deputy Masters of the Perth and Melbourne Mints as recorded in their published reports. It was confirmed by a detailed statement which he (Mr. Evans) had recently received from the Chamber of Mines of Western Australia. The advantageous position in which the Mints had placed the gold producers of Australia and Canada was strikingly illustrated by what had been taking place during the war. It appears that the British Government had been taking over the output of the Australian mines at the rate of 77s. 10½d. per standard ounce at the mints in Australia. On the other hand, the Bank of England, as agent of the British Government, had paid 77s. 9d. per standard ounce, and they had to incur all the expense of sending their bullion to London, Ottawa, or Bombay; that was, this industry had to pay during the war over £850,000 a year more than they should have had to pay had they had a mint and been accorded by the British Government the same treatment as the Australian gold producers. He was sure none of them wished to ask for anything which would in any way embarrass the British Government, but he thought that they were legitimately entitled to claim similar treatment to that which had been accorded to the gold producers of Australia. He had had considerable correspondence on the subject with men who were in a position to know the facts in Australia and Canada, and he was satisfied that it was not an exaggeration to state that had Lord Milner's advice been followed, and had a refinery and mint been established here immediately after the Anglo-Boer War, and operated on the same terms as the Ottawa Branch Mint, the gold producers of South Africa would have saved up to the end of last year an amount exceeding £8,000,000.

The Proposed Mint.

As they were aware, steps were now being taken to establish in the Transvaal a refinery and mint capable of treating the whole output of South Africa. It was to be hoped that in that matter the Government would be actuated not by political but by economic considerations, particularly having regard to the present critical position of the industry. Unfortunately, the local authorities in Pretoria were bringing political pressure to bear in order to have the mint placed there, regardless of the needless additional expense which such a course would impose on these mines.

Attitude of Government.

He had referred to these matters at some length, as they were of vital importance not only to the gold mining

industry but also to the people of South Africa generally. Of the South African products exported in 1913 gold constituted 60 per cent, in value, and the revenue of the Union and the development of its resources depended to a considerable extent on the gold mining industry. It was difficult, however, to avoid the conclusion that in the main Government and Parliament were unsympathetic to the gold mining industry, and did not really appreciate its importance to the country. The unjustifiable burden placed on it by the Provincial Gold Profits Tax under Ordinance No. 14 of 1918 is a case in point. The Government had had ample opportunity to right that wrong but they had done nothing. The recent hasty amendment of the Miners' Phthisis Act, adding enormously to the burdens of these mines, was another glaring instance of the unfriendly disposition of the Government and Parliament towards the industry.

Mr. Brown seconded the motion, and the report, balance sheet and accounts were unanimously adopted. The retiring directors were re-elected and the auditors re-appointed.

TRANSVAAL CONSOLIDATED LANDS.

The annual meeting of the Transvaal Consolidated Land and Exploration Company, Ltd., was held on June 18. Mr. H. C. Boyd, chairman, in moving the adoption of the report of the directors and accounts, said:—The liquidation of the Braamfontein Company and the acquisition and administration for our account from the beginning of the year of that company's assets, which I detailed at our last general meeting, have involved very considerable changes in the balance sheet and revenue and expenditure account as compared with those last submitted to you. While expenditure has naturally increased, revenue from all sources show marked improvement. The Braamfontein Company's land with improvements such as electric lighting and water mains is included in "property account," the houses and buildings taken over being included in the general account embracing such items. It is interesting to note that the value of the Braamfontein Company's ground sold on terms last year amounted to considerably more than half the figure at which the whole stands in the books, the year's profit on the sales being the exceptionally large amount of £18,752. This year the sales of township stands was for a time somewhat restricted owing to the unfortunate building strike which lasted for 12 weeks, but recently there has been a marked revival in demand, and land to the value of £10,200 has so far been disposed of. Property Account now stands at £589,060, of which some £539,000 are represented by farms. As apart from the mineral rights mentioned in the directors' report, the value of which is uncertain, the company owned at the close of the year surface rights of 2,972,669 acres, it will be seen that the land over which such rights are enjoyed stands at the moderate figure of just under 3s. 8d. per acre. Additional to the Braamfontein Company's assets referred to above, the balance of the property account embraces certain Pretoria properties and various items of mortgaged property taken over in the past are now being realised. As you see, slightly over 100,000 acres were

sold on terms last year at satisfactory prices, and taking credit as usual only for the actual cash received in respect of these and previous sales, a profit on farm sales of £14,624 is shown, the actual profit for the period being not far short of double that amount, which is inclusive of £7,530 on account of the sale for £15,000 of some 28 acres of tin bearing ground at Groenfontein and Roo-depoort. The demand for land, especially for cattle ranching, continues, and so far this year we have sold 90,000 acres at enhanced prices. At the close of the year, our cash assets, apart from sundry share holdings standing at £9,572, consisted of mortgage bonds and other investments, totalling about £245,000, after deducting the ample reserve to meet possible losses, tin in transit £16,909, cash £230,372, and Government loans £223,525; the only liability being £11,658 by which amount creditors exceed debtors. It will be noted that in addition to the Government loans transferred from the Braamfontein Company we acquired £90,000 of the 4½ per cent. Tax Free Union Loan. In view of this strong financial position which mainly arises from realisation of assets over a number of years, and of the fact that so large an amount of cash is not necessary for the adequate development of the company's property, your directors recommend, as the report indicates, the distribution to shareholders of an amount equal to 5s. per share, and the simultaneous reduction in the value of each issued share by a similar amount. It will be appreciated that while the company's fixed assets have a value considerably greater than that for which credit is taken, the revenue-earning capacity is not sufficient to permit of reasonable annual returns on the present capital, and it is hoped finally to reduce the capital to a figure on which the payment of regular dividends may be expected. General meetings of shareholders have, therefore, been called for 13th August and 10th September in order that shareholders may consider the proposal. Should they approve it will then be necessary to apply to the High Court for confirmation, and if such confirmation is received it should be possible to make the distribution and effect the reduction of capital by the end of next October. It is to be realised that adequate funds will still remain for an energetic policy of development, which will more particularly take the form of increased ranching and afforestation. The land manager's report deals with our activities in this direction during the past year, and those contemplated for the future.

Breeding Stock.

The bulk of the breeding stock, valued at somewhat over £34,000, is on the Rondeboschje block of farms, which has reached its carrying capacity. The stocking of the Saron block of 250,000 acres, considered adequate to the running of 25,000 head, will be proceeded with as quickly as circumstances permit, but real progress will not be possible till fencing material can be bought at reasonable prices. It is satisfactory to note that the boring has provided ample supplies for the watering of 15,000 cattle. An adjacent block of 100,000 acres of equally good grazing land is also being reserved for subsequent stocking. As the report indicates, we have the utmost confidence in the possibilities of ranching in this part of the country. Details are given of the progress at the Pan and Holtfontein plantations, which when completed will have

a total of 2,700 acres under trees; extension beyond that amount does not appear warranted. The area of the Braamfontein plantation is, roughly, 600 acres, portions of which are, however, laid out in township stands, and liable to be sold. We aim at the extension of the company's forest work on a much more serious scale, and to this end have this year been investigating the suitability of our land for this purpose. It does not appear that any of it presents the necessary combination of suitable soil, climate and accessibility, and to meet our requirements purchase of other land may be necessary.

As has been previously pointed out, the company owns comparatively little grain-producing land, but we can point to a profit of a little over £1,000 from this source last year. The season just passed was not so favourable and the crop is only moderate.

Sabie Game Reserve.

The land manager in his report deals with the position of the Sabie game reserve, in which a large number of this and other land companies' farms have been included for many years. The companies concerned have for long urged on Government the desirability of its acquiring all privately owned land in the reserve, but so far without result. We are at present deprived of the use of 300,000 acres, much of which is excellent cattle land, and could be put to profitable use were we free to deal with it. We have certainly done more than our share in fostering this national reserve, and the time has come when Government must decide whether it can or cannot afford to maintain it. If it can, all privately owned farms in the reserve should be acquired by the State, either by purchase or by exchange for Government farms elsewhere.

Companies Struck Off.

Notice is given, in accordance with Section 196 (3) and (4) of the Companies Act, 1909 (No. 31 of 1909), that at the expiration of three months from the date the names of the undermentioned companies will, unless cause is shown to the contrary, be struck off the register:—No. 860, Bell's Asbestos Agency, Ltd.; No. 3967, Concordia Lydenburg, Ltd.; No. 4694, John Macaulay, Ltd.; No. 5283, Skilpat Tin Mines, Ltd.; No. 5555, The Lees Manufacturing Company (S.A.), Ltd.

Germiston and the Low-Grade Mines.

Speaking last week at Germiston, Mr. C. D. Leslie, consulting engineer of the Consolidated Gold Fields of South Africa, emphasised the critical position of gold mines from the George Goch to Boksburg. The average profits before the war, he said, amounted to 2½ millions per annum, and had now diminished to something like £200,000. There was an imminent danger of a number of these mines closing, and that would inevitably hasten the fall of others. An immediate need existed for some scheme to improve this state of affairs. As to the price of gold, the industry was practically closed to one buyer. India could absorb 15 millions per year at an enhanced figure, and this would materially help to tide over the existing financial troubles. Unless (he repeated) there could be an amelioration of the working conditions the closing down of certain mines was imminent, notably the Simmer Deep and Knights Deep. The cessation of operations, which would practically take place before the end of the year, would have a disastrous effect on the commercial progress of the country. He advocated united action of Reef residents, all trades crafts, and professions in joining hands. The Mine Workers' Union, he said, was about to approach the Mayor and Sir Evelyn Wallers. It

Mining Operations.

The consulting engineer's report deals with the mining and prospecting operations of the year. At Groentontein a profit of £12,487 was made, which was partly used to write down the plant to what is believed to be the quite conservative figure of £5,000. The price of tin has been appreciably lower this year, but the general outlook of the mine is more favourable than it has been for several years past, and if values are maintained we may expect this year's profit to equal that of last. The Mutue Fides Mine, which was able virtually to mill throughout the year, made a profit of £25,759, about half of which was employed to write down "mineral prospects in course of development" to a nominal figure of £10,000. Of the properties included in that account the Montrose Gold Claims have recently been let on tribute, while Blane Witkop Zinc Mine remains closed down, as zinc concentrate is today quite unsaleable at a profit. This year Mutue Fides has only been able to mill for four months, the crushing of ore ceasing early in May, owing to lack of water. If the season is favourable operations should be resumed in November, but the profits for this year will be much reduced. Although the principal occurrence in the main working is still large and well defined its value is now appreciably lower. Fairview and Rietfontein are still let on tribute, and Mount Morgan, the value of which has been written down to £1,000, has now been similarly dealt with, as the negotiations for sale mentioned last year fell through. The tributors of the asbestos deposit at Penge have been handicapped by shipping difficulties, but the prospects are satisfactory. A small revenue has been realised by the output of Zorundum on certain farms in the Zoutpansberg district.

The Swaziland Tin, Limited, paid dividends totalling 35 per cent. for the past year. Part of the amount so received was devoted to writing down our share holding to 15s. per share. The decrease in the price of tin this year has materially reduced that company's profits, and I understand that the dividend for the half-year will not exceed 5 per cent. Details are given of the boring results at Holfontein, which unfortunately were quite unsatisfactory. The cost of this boring has been charged out under the heading of prospecting, and the old amount on account of previous prospecting which had figured in the balance sheet for many years, has been written off. You may recollect that in 1910 all of the company's farms were thrown open to public prospecting, but with little result, as there is to-day only one tributary area in occupation. The company has now expressed its willingness to the Government to throw open the whole of the farms which are not actually being worked or occupied to public prospecting on a sliding scale royalty basis. We hope that benefit may thus accrue to individual prospectors and to the company.

Lack of Roads.

Reference is made by the consulting engineer to the lack of adequate roads throughout the Transvaal, and the steps which are being taken to direct the attention of the Government to this important matter. Generally speaking, such a thing as a good road is unknown in the districts and the outside mines, and the farming community as a whole labour under the greatest disadvantage in this respect. The provision of serviceable roads is of vital importance to the development of the Province, and would benefit the whole community. The Board desires to record its appreciation of the valuable services rendered by the chief officials and the staff generally.

was decided to leave in the hands of the Mayor the matter of bringing the various sections together to take active measures.

Ceylon, Lydenburg, Proclaimed.

A notice in the "Government Gazette" states:—Whereas it is expedient to proclaim as a public digging for precious metals the farm Ceylon No. 804, situate in the District of Lydenburg, Mining District of Pilgrims Rest, Transvaal Province, registered in the name of The Ceylon Lydenburg, Limited, in extent 5,095 morgen 52 square roods, according to the diagram framed by Land Surveyor D. Roos in December, 1910, and confirmed by the Surveyor-General on the 10th August, 1911, under S.G. No. A.728/1911; And whereas notice of the intention to proclaim the said farm as a public digging has been published in accordance with subsection (3) of section twenty-six of the Precious and Base Metals Act, 1908, of the Transvaal (Act No. 35 of 1908); Now therefore under and by virtue of the powers in me vested by section twenty-six of the Precious and Base Metals Act, 1908, of the Transvaal (Act No. 35 of 1908), I do hereby declare, proclaim and make known that the said farm Ceylon No. 804, situate in the District of Lydenburg, Mining District of Pilgrims Rest, Transvaal Province, in extent 5,095 morgen 52 square roods, as defined herein by the diagram aforesaid, a copy of which is filed in the Mining Titles Office, Johannesburg, under No. 1366, shall be a public digging for precious metals on and after the twenty-third day of June, 1919; And I do further declare, proclaim and make known that the said farm Ceylon No. 804 shall be open to the public for the pegging of precious metal claims in accordance with Chapter V. of the said Act from and after 9 a.m. on the twenty-seventh day of June, 1919, excepting and excluding certain areas.

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Notes and News.

Wankie to Equip a New Colliery.

At the Wankie Colliery the surface equipment has almost reached its limit, due to the cramped site on which the plant is placed, and as no other additions can be put in and operated unless at a cost quite out of keeping with results it has been decided to open up and equip a new colliery.

Aurora West Breakdown.

The following cablegram was despatched this week to the London office of the Aurora West United G.M. Co., Ltd.: "Aurora West serious breakdown mill engine 20th June. Repairs cannot be completed before middle July. Meantime can run only 15 stamps. Tonnage for June and July will be greatly reduced and substantial losses will be made in these months."

Western Rand Estates to be Re-started.

As we go to press we learn that arrangements have been concluded for re-opening the properties of the Western Rand Estates, Ltd., on the Far West Rand. It is understood that a powerful American Corporation has undertaken to provide ample funds for the development of this vast property, which is in point of fact easily the largest individual undertaking on the Witwatersrand. The company holds in freehold and mineral rights no less than 21,279 morgen (equivalent to 45,038 English acres) to the south-west of Randfontein and the existence of a rich reef series extending along a strike of about 7½ miles has been proved by boreholes. The average reef value disclosed by these boreholes was 71.478 dwts. over a width of 9.85 ins. In view of the success of the cementation process on the East Rand there can be little doubt as to the practicability of sinking shafts through the aqueous dolomite formation which is not of great thickness on the Western Rand Estates properties. The capital of the company is £202,500 and the announcement which we are here able to make may well have a most important bearing on the prosperity of our gold industry. We propose to deal more fully in our next issue with this important development.

Dividends.

In our usual monthly table showing mining companies' results at a glance are included the dividends declared to date for the half-year. The complete dividend table will appear in our next issue. Amongst the features of the half-year's declarations may be mentioned: Compared with the previous period, New Modders are 2s. better at 26s., Modder B. 1s at 9s., City Deep and Pretoria Cements 6d. each at 2s. and 2s. 6d.. The Robinson Gold Mining Company are distributing 5s. per share as a bonus, on account of money received from the Union Government in payment of Bewaaplaatsen rights. The Rand Selection Company is distributing eight of their shares as a dividend, and at 75s. this equals 6s. per share as compared with 1s. 6d. last time. The Village Main Reef Company is giving out one Village Deep Company's share to every four held, or 25 to each 100, equalling about 3s. 6d., as against nothing in December. There are no changes in Apex 6d., Brakpan 2s. 6d., Cassel Coals 1s., Crown Mines 6d., Cons. Main Reefs 6d., Goldenhuis Deep 6d., and Rose Deep 1s. 6d. The declines are Anglo-French 8d. to 8d., Natal Navigation 3d. to 9d., Rand Mines 3d. to 1s. 3d., and Swazi Tin 1s. at 1s. Of the Barnato Mines, Government Gold Mining Areas distribute 17½ per cent. as compared with 15 per cent. last December and 12½ per cent. a year ago. The Van Ryn Deep dividend of 22½ per cent. is at the same rate as each of the two distributions of last year. The Witwatersrand, Consolidated Langlaagte and New United declarations are each of 5 per cent. and involve exactly the same amounts as were distributed by these companies six months ago, and the Langlaagte Estate dividend of 7½ per cent. also exhibits no change. Of the Union Corporation mines the Modder Deep declares 50 per cent. and the Geduld distribution is postponed pending the distribution of enemy shares. As to the "C.M.S." subsidiaries, Brakpan pays 12½ per cent., and the Springs dividend, as anticipated, is passed.

The Chamber of Mines' Quarterly Meeting.

Full reports of the important speech made by Sir Evelyn Wallers at the Chamber of Mines' quarterly meeting last Monday have appeared in the daily papers. A summary of his remarks on the plight of the low-grade mines appears in another column. Dealing with the new Phthisis Act, the President emphasised that the Chamber yielded to no one in the desire to meet any distress arising from this occupational disease, and had shown by the expenditure of great sums of money that it had concentrated on the most important feature of all, the elimination of the disease. The Government Mining Engineer had expressed a definite opinion that men entering the mine now, if they took care, need not contract phthisis. The compensation had reached a figure unheard of in any occupational disease in any country. The President characterised as an inequitable provision that the mines that caused least phthisis and had different ownership should provide a portion of the compensation for phthisis caused by others. The retrospective application of the Act to present beneficiaries and to dependents of past beneficiaries would alone mean the payment of an additional two millions sterling. Referring to the relation between employers and employed, the President hoped the Commission to investigate the position of the industry would take a large view and invite evidence from those who had suggestions to make for securing the further co-operation of employees in the industry. As to the disposal of gold, the President said it was their strong desire that the flow of gold to London should not cease, and he earnestly hoped the British Government might find itself able to offer approximately the same terms as could be obtained by shipment to other countries.

* * * *

Consolidated Mines Selection.

The "C.M.S." report for the year to December 31 last states that at the last annual general meeting the shareholders were informed that the directors had been for some time in negotiation for the purchase of enemy shareholdings in the company. When the shares in question had been fully vested in the Public Trustee the negotiation was successfully completed, a purchase was effected of these shares, and they were offered to British and Allied nationality shareholders *pro rata* to their holdings at 25s. free of stamp duty and registration fee. Applications for these shares were in large excess of the number offered, and they have all been duly allocated. The amount of debentures outstanding as at December 31 last was £90,160. This has since been further reduced by the redemption on January 1, 1919, of £6 360 debentures drawn for repayment, and now stands at £84,100. The accounts submitted show a profit of £170,617, including £10,311 brought in. The directors—as previously announced—recommend a dividend of 30 per cent., less income tax, and that £20,000 be placed to reserve, leaving, subject to further remuneration to directors and managing directors in London and Johannesburg, a balance of £32,550 to be carried forward. As regards the financial position, the balance sheet shows that cash and cash assets as on December 31 last exceed the total of current and contingent liabilities by £228,603. Properties and unquoted securities, as valued by the directors, stand in the books at £22,980, while quoted securities taken at cost or under, but in no case higher than the market price at December 31, 1918, amount to £635,164, together £658,144. These quoted securities, if taken at prices ruling at December 31, 1918, would show a substantial appreciation over their valuations on the books. The net profit for the year amounts to £160,335, arrived at as follows: Net profits realised on sales, commissions, etc., £103,647; interest and dividends, £91,677; transfer fees, £254—£198,578, against which had to be written off expenses, etc., £6,828; debenture interest, £1,523; cost of investigation, claim licences, depreciation, etc., £9,851; income tax London and taxes Johannesburg, £17,037—£38,212; leaving £160,335, and £10,311 was brought in, making £170,647. Having regard to the continuation of war conditions practically throughout the year under review, and to the numberless difficulties and restrictions under which business has been carried on, the directors regard this result as satisfactory.

Australian Zinc.

The Australian Zinc Producers' Association has an announcement in this issue stating that it is now prepared to supply electrolytic zinc, containing about 99.95 per cent. metallic zinc; spelter, containing about 98.75 per cent. metallic zinc; high grade zinc dust, containing about 90 per cent. metallic zinc; and zinc concentrates of various grades. Those interested should get into touch with the Zinc Producers' Association in Melbourne or London.

* * * *

Excess Profits and Trade.

At the annual dinner of the Association of English Country Bankers and the Central Association of Bankers recently, according to "The Times," Lord Faber welcomed the reduction of the excess profits duty, which had proved a great drag on trade. Germany could pay to a small extent in timber, potash, etc., but she could pay very well by using her industry to manufacture goods and send them to England. Mr. Illingworth alluding to the excess profits duty, said that before he joined the Government he was on the Excess Profits Appeal Board in London, and the cases that came before them there proved that the tax, though just in theory, was one of the most unjust taxes ever imposed upon any community in the history of finance in this country. For the time being the injustice would be alleviated somewhat by the reduction of the tax to 40 per cent., and that would result, he hoped, in a certain amount of increased activity in business enterprise. The crushing financial burden which was on the country imposed a great and serious task on the trade community.

* * * *

Rhodesia Broken Hill: Borehole Results.

The Rhodesia Broken Hill Development Co., Ltd., have issued the following report:—Additional pump, raising 120,000 gallons hourly, has enabled us since March to unwater ore body further 11 feet, making total depth of 34 feet from surface. No lowering of water level has occurred since May 1: pump has been removing during that period 170,000 gallons hourly. Work at N.E. corner of No. 1 Kopje shows good promise of ore extending in easterly direction as follows:—Borehole No. A6 (situated 130 feet E. of No. 1 Kopje) cutting good body of zinc ore and lead ore, the latter containing 28 p.c. lead from 55 feet to 72 feet. Borehole No. A7 (situated 320 feet E. of No. 1 Kopje) cutting large bodies of zinc ore and lead ore, the latter containing 23 p.c. lead from 125 feet to 148 feet. Prospecting shaft is down to water level in high grade lead ore, midway between these boreholes, both of which are inclined 60 degrees to horizon.

* * * *

Union Corporation.

The report of the Union Corporation for 1918 points out that at extraordinary general meetings held on 30th August and 21st September last the name of the company was changed from "A. Goerz & Co., Ltd." to "Union Corporation, Ltd." The profit and loss account shows a realised net profit, after deducting all outgoings, including commissions and bonuses paid to the management and staff, of £145,380. Including £24,984 brought forward, there is £170,364 to be dealt with. The directors have decided to place £20,000 to reserve and to declare a dividend of 12 per cent. (1s. 6d. per share), involving £105,000, and leaving £45,364 to be carried forward. The dividend will be payable to the shareholders registered on 5th June and warrants issued about five weeks after that date. The balance sheet shows share and debenture holdings £777,816 and sundry participations and interests £1,740. They have been taken into the accounts either at cost or at the market price of 31st December, or in cases where market price exists at the directors' valuation, whichever may be the lower. The company's interests are largely centred in the following companies: Geduld Proprietary, Klerksdorp Exploration Land and Estate, La Fe Mining, Modderfontein Deep Levels, Princess Estate and Gold, Randfontein Deep, San Francisco Mines of Mexico, Van Dyk Proprietary, Witkop Proprietary. The corporation has holdings in a considerable number of other companies.

TOPICS OF THE WEEK.

THE POSITION OF THE INDUSTRY.

THE speech in which the President of the Chamber of Mines reviewed the mining industry last Monday was very brief and impressive. More in sorrow than in anger the President dealt with the position *vis-a-vis* the attitude of the Government, and put on record a considered protest against the latest phthisis legislation and Provincial Council taxation. In regard to the main question he declared that the amazing indifference to the future well-being and prosperity of the mining industry, and the apparent disregard of the real interests of this community and, consequently, of the Union as a whole, that had been evinced in Parliament during the last few months were not peculiar to the Government alone or to any one political party. Unfortunately they appeared to be held by the great majority of all parties; and the absence of Generals Botha and Smuts had been felt in a very acute manner. After mentioning that the additional financial burden borne by the mines during the period of the war was not less than £15,000,000, Sir Evelyn Wallers said that he never imagined, nor, he thought, did anyone with a knowledge of the industry, that from the Parliament of their own country, from the members who presumably represented the Witwatersrand in that Parliament—that at their hands, with but few exceptions, there would be placed upon the industry additional burdens that, so far as could be seen, had in them every possibility of not only closing down, much more rapidly than would otherwise have been the case, the large low-grade and medium-grade section of the Rand, but in their cumulative effect possessed the power of limiting in a most serious manner the life of the whole of these fields. The President reviewed the position existing on all the mines between Randfontein in the West and the Van Ryn Deep, the first mine of the section known as the Far East Rand. In this section of the fields, between these two mines, covering laterally a distance of approximately 45 miles, there were at present working 38 mines, employing 18,000 white workmen and distributing in wages and stores per annum £19,000,000. All these mines, except probably 14 at the present time and under present conditions, were causing grave anxiety as to their future; and even in the fourteen that did not cause anxiety there were five that in any case were coming near the end of their lives—the end, of course, having been hastened appreciably by the burdens resulting from the war. In drawing their attention again to these facts, Sir Evelyn said he conceived it to be his duty in the position he occupied definitely to indicate to them and to the community the necessity of facing the facts. As every added burden came on the industry, so every mine strained all efforts to get ore of the highest possible value—in other words, to overmine; and the last three years certainly has been a period when that method had had to be pursued to the utmost extent in order to enable the mines concerned to keep their heads above water. They had laid before Parliament during the last two years various suggestions which, if put into effect, would, he was convinced, have enormously improved the position with which they were now faced. They had all been rejected, and, he understood, rejected because of some political party aspect. The result was that a most valuable asset had been wasted and was in the gravest danger of being destroyed to a large extent. Dealing with the increase in working costs, the President later in his address pointed to the fact that the gold output continued approximately equal to that for 1918. Working costs still advanced, being 1s. 10d. higher for the period January 1 to May 31, 1919, than for the corresponding period of 1918, and 5s. 3d. per ton higher than in 1914. In February they reached the extraordinarily high figure of 23s. 2d. per ton. The grade had increased to 28s. 8d., the mines being compelled more and more to extract their higher grade ore. The working profit per ton had fallen to 5s. 8d. He recommended to legislators a careful study of the Chamber's monthly analysis

of gold production. No one has worked harder than the President of the Chamber of Mines to keep the facts before Parliament and the Government. For what may happen in the future he is therefore relieved of responsibility; and the latter is now the affair of the Government.

NATIONAL BANK ANNUAL MEETING.

A WELCOME note of confidence and hope was struck at the annual meeting of the National Bank in Pretoria this week. The chairman, the Hon. Hugh Crawford, took a wide view of the economic position of the country, and his conclusion is that "with the great natural wealth of South Africa, and given determination on the part of her people to develop it along sound lines, there should be nothing to fear for the future. Prosperity, I am convinced, lies before this country, if only we so organise ourselves as to deserve it, and in this prosperity there is no reason to doubt that the bank will have its share. At the moment perhaps our very immediate trade prospects are a little difficult to foresee, because of the dislocation brought about by the turmoil which the world has experienced. These conditions have for some time engendered prosperity to our merchants, but I think most of them have recognised that the times have been exceptional and are prepared for some reaction, the effects of which have no doubt been reasonably discounted." In regard to the Rand, Mr. Crawford says: "It seems certain that cessation of operations on the part of some of our mines cannot fail to reduce the spending power of the communities in their immediate environments, and in a few of the affected neighbourhoods depression is likely to be felt. It is, however, a hopeful feature that new areas now being developed will before long enter the producing stage, and help to recompense for the suspension of operations on the older and less payable properties." Cordially do we echo this hope. Turning to the question of exports that are to make up for the declining gold output, Mr. Crawford emphasised the need for production, and more production. "A country," he said, "like an individual, can progress only if it saves out of its income. This means that our future lies in the measure by which our production exceeds our consumption. In this connection it is gratifying to observe that in 1918 the exports of the Union were valued at £32,949,237, exclusive of native gold, which, as I have said elsewhere, was produced to a value of nearly £36,000,000. Imports were valued at £19,487,168, which shows an increase of some £11,000,000 over the 1917 figures. This increase is largely accounted for by the item 'cotton goods,' the importation of which, as is notorious, was much overdone in certain quarters." Mr. Crawford repeated his plea for replacing "our present cumbersome monetary system" by the system of decimal coinage and our system of weights and measures by the metric system. "The loss of time involved in our schools," said Mr. Crawford, "in our shops and offices, and throughout our commercial life, in prosecuting calculations under the present system, must be tremendous. I have yet to be convinced that the alternate systems, which are models of simplicity and ease, could not be readily substituted with little inconvenience initially and incalculable benefit ultimately." Mr. Crawford made a most interesting announcement regarding a co-operative scheme which "will more closely identify the interests of the staff with the fortunes of the institution they serve. Such a scheme of necessity entails much thought and careful planning, and possibly the assent of the shareholders. I refer to it now merely in a general way, and so that it may be known what is in our minds." If the National Bank can successfully evolve such a scheme it should prove a valuable object-lesson to other employers in this country, and might even in some modified form be capable of application to the mining industry. The excellent progress made by the Bank last year and the figures that reflect it have already been dealt with in our columns. It only remains to congratulate the chairman, the directors and the shareholders on the all-round evidence shown of successful enterprise tempered by sound and prudent management.

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HARNESSING THE VICTORIA FALLS.

Revival of a Colossal Power Project—The World's Greatest Electrical Undertaking—History of the Falls Power Coy.—What Canada is Doing—How Prosperity Might be Greatly Increased in the "Union of Disunion"—Electrification of South Central Africa Pending.

ALTHOUGH the Victoria Falls and Transvaal Power Company has now been in existence for nearly thirteen years, no attempt has yet been made to undertake the great project for the carrying out of which the company was originally floated, *i.e.*, to develop electrical horse power by harnessing the Falls and to deliver the power so generated to the larger industrial centres of Central South Africa.

ORIGINAL VIEWS.

The romantic ambition of such an undertaking won for the Victoria Falls Company a good deal of popularity a dozen years ago in engineering circles. The prospect also appealed to people of the wealthy old maiden aunt class who, dazzled by the splendour of the conception, did not hesitate to invest money in the scheme. The flotation of the Falls Power Company on the other hand offended the susceptibilities of certain worshippers at the shrine of scenic beauty. It was, however, represented that the natural splendour of the Falls would in no way be impaired by the scheme, and this, combined with authoritative engineering opinion that the project was feasible and with authoritative commercial opinion as to the magnitude of the Transvaal market for electrical power, conspired to bring about the registration in October, 1906, of the Victoria Falls and Transvaal Power Company, Ltd. This company acquired through the promoters (the African Concessions Syndicate, Ltd.) the preferential right to develop 250,000 electrical horse power at the Victoria Falls and the exclusive right to deliver power from the Falls to the Transvaal Colony. These rights were granted for a period of 75 years from December, 1906, by the British South Africa Company to the vendors, and the consideration was £1,120,000, payable £120,000 cash and £1,000,000 in fully paid £1 shares.

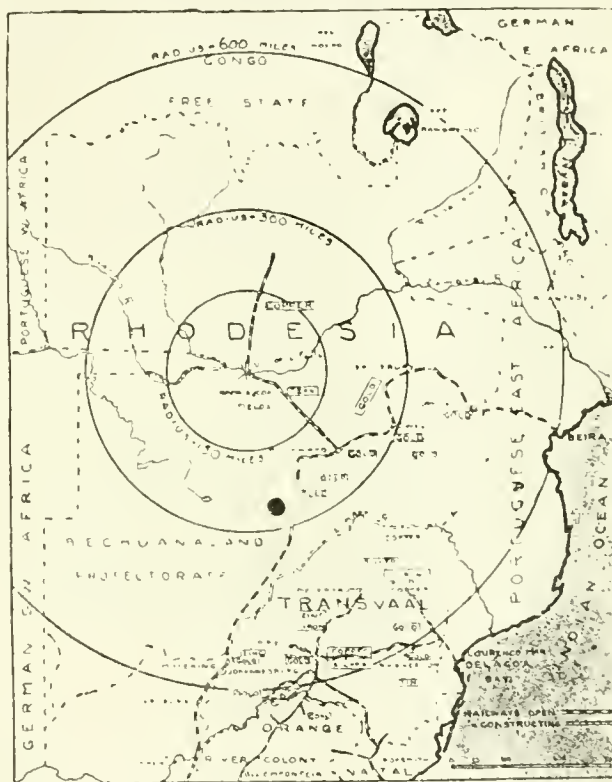
NEARER HOME SCHEMES FIND FAVOUR.

But very shortly after the flotation of the company the undertaking of the Victoria Falls underwent a distinct change. It abandoned, or at least indefinitely shelved its Zambesi project and concentrated its energies and financial resources on power stations in the Transvaal itself and on electricity generated by steaming plants consuming Transvaal coal. The members of the British Association who visited South Africa in 1904 were astonished to find that in such an important industrial region as the Southern Transvaal power schemes of magnitude were conspicuous by their absence. Financial, engineering and mining interests quickly set to work to rectify this industrial omission, and about the time that the original Victoria Falls power baby was born amidst much shouting and fanfares of many trumpets, other less ambitious projects came into being. These opposition concerns based their enterprises on the abundance of cheap and good coal in the Southern Transvaal itself and reckoned that what they lost in spectacular achievement they would more than make up for by economies in regard to shorter transmission lines and by the comparative rapidity with which these near home undertakings could pounce on the Rand market where the magnitude of the demand for power has never been questioned. Eventually after many negotiations all these power concerns were brought under the control of one central organisation—the Victoria Falls and Transvaal Power Company, which now owns the power stations at Brakpan, Simmer Pan, Rosherville and Vereeniging, with combined plants having a total capacity of 274,184 horse power.

THE ENGINEERING ASPECT.

At the time the scheme aroused tremendous interest in engineering and financial circles. In 1906 it was stated that "in two years' time its partial consummation may

be expected, and the promoters anticipate an ultimate saving in the cost of working the mines of at least a million sterling annually. The idea is not of recent birth. The tremendous energy stored in the Victoria Falls, which Livingstone discovered in 1855, was brought to the notice of the late Mr. Cecil Rhodes by Sir Charles Metcalfe, who, with Sir Douglas Fox, is consulting engineer to the Rhodesia Railways, and jointly with Sir Douglas designed the Cape to Cairo Railway. But serious attention was not given to the matter until 1904, when the railway reached the Falls, and was carried over the gorge by a bridge of one magnificent span 600 feet in length. Mr. H. Wilson Fox, manager of the British South Africa Company, then conceived the gigantic scheme which is now in course of fulfilment, and it is to him we are indebted for details of the project. At the outset it was fully realised that the proposal had an international bearing, and the promoters sought the best



Map showing 600 mile radius from the Victoria Falls.

possible cosmopolitan advice before formulating their plans. As engineers-in-chief, Sir Douglas Fox and Partners and Sir Charles Metcalfe were taken into consultation; Mr. Ralph D. Mershon, of New York, who is prominently connected with the most recent development in connection with the extended use of the Niagara Falls for the production of electrical power; Professor André Blondel, of Paris; Dr. Edouard Tissot; Monsieur Thury, of Geneva; Professor Klippenberg, of Berlin; Mr. G. A. Hobson; Mr. Arthur Wright; and Mr. A. W. K. Pierce, consulting engineer to the Consolidated Gold Fields of South Africa, have all given expert attention to the various engineering questions arising, either on the spot or in consultation; while at the Rand end the problem has been specially studied by the best engineers at the service of the Allgemeine Electricitäts-Gesellschaft, Berlin, the largest electrical concern in the world. Without exception, these eminent authorities declared the scheme practicable, so that its adoption is as securely justified as human foresight could make it. Indeed,

it is agreed that although the length of transmission exceeds anything of the kind ever yet attempted in any part of the world, there are fewer obstacles in other respects than usually present themselves in schemes of this nature. The question of distance is considered of little account. Sir Douglas Fox and Partners advise that there is theoretically no limit to the space over which electric power may be conveyed. Electrical tramways are now being worked at Oakland, in California, by power developed 140 miles away, and places 350 miles distant are served by the California Gas and Electric Company. That is the greatest space yet traversed by any system in operation. In South Africa it is to be almost doubled. The main considerations are engineering and economical. Here everything is in favour of the scheme. There are no mountains to cross, no forests to penetrate. Destructive natural upheavals, snowstorms, and depredations of mischievous natives who regard electric cable towers as natural targets for rifle practice are very unlikely to occur." Such was the expert view in regard to this stupendous project.

How was this enormous force to be controlled and utilised? Hydraulic power was to be developed by means of a canal which would take water from a point on the northern bank of the river above the Falls and deliver it at a convenient spot near the top of the gorge at the first or second bend below the Falls. The water would be conveyed thence by means of a series of ducts affixed on the slope of the gorge, and delivered at a power-house near the water's edge 350 ft. below. Detailed surveys for this part of the work were completed.

THE SCHEME RECONSIDERED.

It is now of great interest to learn that the scheme is being reconsidered in its original form and that there is a likelihood of the harnessing of the Falls becoming an actual undertaking in the near future. Technical experts have recently been engaged on reconsidering the scheme on the spot and it is understood that the recent departure of one of these gentlemen to England is in connection with the carrying into practice of the project. Since 1906 there has been very considerable growth in the scope of the project and although the Rand mines are not now without electrical power schemes as they were thirteen years ago the profitable scope of the undertaking has greatly increased with the development of Southern Rhodesia, the Katanga and Broken Hill mineral belts and the construction of the Lobito Bay railway. The application of electricity to agriculture is another important consideration, and in this respect it will be worth while to consider for a moment the importance of electrical power schemes in Canada.

A LESSON FROM CANADA.

A writer on Canada in a recent issue of a well-known London magazine claimed that Canada is destined to lead the world in the near future. "Five nations," he wrote, "have swayed the world since the Middle Ages. There was the age of Italy, enlightening other countries with her great fire of new knowledge and art. There was the age of Spain, widening the bounds of space and increasing the resources of Europe by the discovery and settlement of America. There was the age of France, spreading grace, urbanity, and the spirit of reason among European peoples. There was the age in which Great Britain intervened, transforming the earth by her political and industrial systems and her material and intellectual inventions. There was the age of great awakenings, which seemed likely to be the age of Germany, but will probably now become the age of America. What nation will follow the United States in the rise to world-power and wide possessions? We may be almost sure that it will be Canada. In less than fifty years the second daughter State of Britain may very well be feeding both her mother and her elder sister. Her resources in food and metal will rank among the master forces of the League of Nations." He further contended that the presence of water power and the application of this power through the medium

of electricity to farms and mines was the great Northern Dominion's most valuable asset. He said: "In the old eastern farms electric power is being employed in an extraordinary way. Ontario and Quebec, for example, are regions of water-power. Government transmission lines already distribute the water-made electric current over two hundred miles, at a cost much cheaper than coal-power, and the enterprising farmers, hitching their machinery to the Government lines, get a great deal of work done for them by their rivers. The use of one horse-power night and day for a year costs only about £2, and it will light the farmhouse and cattle-sheds, toss the butter-churn, cut the cattle-food, thresh the corn, sweep and dust the house, and, if need be, rock the baby's cradle. When the farmers are provided with a light yet powerful accumulator, which is likely to come in the course of a few years, they will charge their tractors from the transmission line, and plough, hoe, and harvest with power obtained from the Niagara Falls and the lesser cascades of their country."

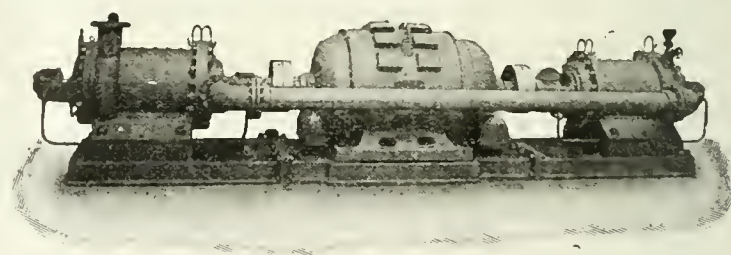
South Africa may well take to heart these forceful facts. South Africa is not advancing to-day; she is slipping backwards in the race for world trade, and other countries are fast overtaking the "Union of Disunion," as a writer in *The Times* has aptly termed the country.

A GREAT UNDERTAKING.

We believe that the future prosperity of this country depends greatly on the development of our latent power assets, on the development of our coal fields, and the harnessing of our water power projects, of which by far and away the most important is the great conception to bend the mighty Victoria Falls to the needs of industry and so to effect the electrification of South Central Africa.

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RANDFONTEIN PROFITS AND DEVELOPMENTS.

Improved Results Secured—The Prospects of a Brilliant Future.

ALTHOUGH the West Rand has not figured very prominently in our mining achievements during the past year or two, it should not be overlooked that the Randfontein Central is pursuing an active policy of exploiting its great property. Both productive and development operations have shown marked improvement during the past few months, and the general opinion is held that Randfontein will become a most important proposition in the near future. In connection with recent achievements it should be noted that in the first quarter of this year the Randfontein Central secured a working profit of £26,915, as against a loss of £16,821 for the previous quarter. These results have been more than maintained since March; in April, for instance, the company earned £9,149 and in May £9,359. But these returns cannot be considered as representative of the results that this mine is likely to secure in the near future when the new

shafts and development drives from these shafts have exploited the mine and when that crippling factor acute shortage of native labour has been removed. The indications for future prosperity at Randfontein as exhibited by recent development operations are certainly bright. In the first quarter of this year, for example, the development footage sampled amounted to 9,927 feet and gave the following results—payable, 8,770 feet, having an average value of 26.1 dwts. over 15 ins. of reef; unpayable, 1,157 feet, giving 7.7 dwts. over 22 ins. Both the percentage of payability and the value and width of the reef of the payable sections are encouraging, to say the least of it, and they point to the likelihood of the enterprising firm of Barnato's making a real and permanent success of this, the Cinderella of the Rand's largest propositions, before many months have elapsed.

PERSONAL.

Mr. Samuel Evans sailed for England this week.

Sir H. Ross Skinner, Col. Dalrymple and Mr. Birkenruth have returned from Rhodesia and the Congo.

Mr. "Jonesy" Jones, of the Village Deep, has returned from France and has resumed work as Underground Manager of the Village Deep.

The South African Institute for Medical Research has expressed its willingness to extend its services to the public bodies of Rhodesia in return for a commuted payment of £1,000 per annum. Discussion has been proceeding in Rhodesia as to the manner in which this expenditure should be met.

Major G. R. G. Robertson, D.S.O., who recently returned to Bulawayo, succeeds Sir Bouchier Wrey as general manager of the Mashonaland Agency (states the *Chronicle*). Sir Bouchier, who leaves in about a fortnight on a short visit to England, will retain his various directorships. It is understood that on his return he will take a more active part in politics.

A large number of people will regret to hear of the death of Mr. Hermann Flugge, by which the Rand loses a well-known personality. In Johannesburg he was best known on the Stock Exchange, as a member of the Rand Club, and before that as a diamond broker in Kimberley. As a hunter of big game in the early days he was known to many, and he was a lifelong friend of the late F. C. Selous.

Mr. Elsdon Dew has been appointed president of the South African Institute of Engineers. Other members of the Council for 1919-20 have been elected as follows: Vice-presidents, Messrs. J. W. Kirkland and J. Whitehouse; hon. treasurer, Mr. E. Goffe; auditor, Mr. F. W. Bompas; members, Messrs. E. J. Laschinger, J. Orr, R. C. Atkinson, A. Robertson, P. Cazalet, T. Butt, M. Newball, T. G. Ottley, W. Martin Epton, H. S. Potter, J. J. Wessels and R. Craib.

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Diamond Fields' Jubilee.

At the meeting of the Kimberley City Council last week a letter was received from Mr. S. W. J. Harsant, as hon. secretary of the Diamond Fields Pioneers' Association, with reference to the proposed celebration of the jubilee of the Diamond Fields. The letter brings to notice the fact that the great rush to the then newly-discovered fields took place in the early part of 1870, so that next year may be deemed a fitting occasion to commemorate the jubilee of the event.

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LATEST DEVELOPMENTS AT THE GOLD FIELDS MINES.

Improvement at the Sub Nigel—The New Shaft—Robinson Deep Profits Increase—Work in the Southern Section—The Plight of the Germiston Mines—Employees Appointing Efficiency Committees—The Only Means of Salvation.

THE plight of the Gold Fields mines has been only too clearly disclosed in the recent monthly returns of the subsidiary companies comprising this group. The Consolidated Gold Fields control two or three of the largest low-grade mines on the Central Rand section and the burden of war costs and of excessive taxation has fallen upon these properties very heavily; so heavily in fact that it is difficult to see how cessation of work can be avoided at three of them.

THE EFFICIENCY QUESTION.

We dealt with this tragic feature of Rand mining in our last issue and then referred at some length to the possibility of salvation being secured through increased effort on the part of employees. This, it seems, is the only way in which the shutting down of the Knights Deep, Simmer Deep and Jupiter can be avoided. In our last issue we referred to meetings held voluntarily by employees at one or two mines, at which it was resolved by the employees themselves that efficiency could be improved by a quarter through loyal co-operation. We are now glad to hear that there is a tendency for these efficiency meetings to be extended to other mines along the Reef. The Germiston mines are appointing self-elected Efficiency Committees, and in one or two instances the managements have been assured by employees that underground breaking costs can and will be reduced by 25 per cent. through more loyal and strenuous efforts on the part of underground workers. This is the most encouraging news we have heard for some time past. In the absence of sympathetic action by the Government (and that, it seems, is not to be expected), increased efficiency is the only possible means of staving off the cessation of work at several of our lower-grade properties and of obviating wholesale unemployment and acute depression throughout the country. We understand that some officials of the Miners' Union are moving in the matter and we shall be most pleased to chronicle any views which the workers themselves may care to send us on the subject of keeping the mills going at a minimum of cost.

ROBINSON DEEP AND SUB NIGEL.

During the past few months the two most profitable mines of the group have been the Robinson Deep and Sub Nigel. At the former property the workings in the new deep level Christopherson shaft are now in good development and stopping conditions, and the recent improved returns of this company are in the main due to better working results in this section of the mine. In April the company employed 115 stamps and 9 tube mills and crushed 45,300 tons for a profit of £4,866. Last month, however,

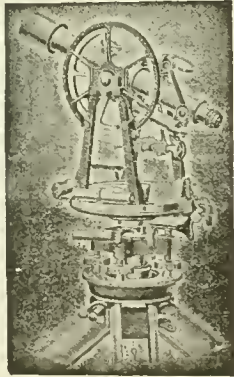
the Robinson Deep operated 140 stamps and 10 tube mills and crushed 52,200 tons for a profit of £9,521. Last month the Sub Nigel's profit was £1,561 less than in April, but in regard to this property it is satisfactory to learn that development results recently have shown distinct improvement. The reef disclosures of the past six weeks show a substantially higher percentage of payability than in the previous months. The new shaft is now being sunk through the lower base of the amygdaloidal diabase formation and the outlook for the company appears to be satisfactory.

TWO MONTHS' RESULTS.

The productive results secured by the subsidiaries comprising this group for the past two months have been as follows:

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs	Total Profit
APRIL:					
Simmer and Jack ...	320	7	46,800	10,968	£1,968
Robinson Deep ..	115	9	45,300	14,732	4,866
Knights Deep ...	400	11	82,900	16,821	*850
Simmer Deep ...	220	10	38,600	9,254	*8,922
Jupiter ...	80	5	21,200	5,639	*3,171
Sub Nigel ...	30	2	9,550	5,763	5,840
Totals ...	1,165	41	244,350	63,177	*£4,205
* Loss.					
MAY:					
Simmer and Jack ...	320	7	54,800	14,092	£6,728
Robinson Deep ..	140	10	52,200	17,261	9,521
Knights Deep ...	400	11	93,100	17,515	*3,044
Simmer Deep ...	220	10	43,700	10,013	*7,292
Jupiter ...	80	5	23,600	5,732	*2,985
Sub Nigel ...	30	2	10,300	5,970	4,279
Totals ...	1,190	45	277,700	70,583	£7,207
* Loss.					

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the S.A. Mining Journal. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.



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THREE SEAS BRAND.

S.-W. Transvaal Diamonds: May Month's Big Return.

The South-Western Transvaal's alluvial diamond diggings continue to show good returns, and the total for the month of May was another big advance on preceding months, as will be observed from the figures for the first five months of the current year:

	Carats.	Value.
January	3,385 ³ / ₄	£31,685 8 0
February	4,631 ¹ / ₂	41,968 8 6
March	5,431 ¹ / ₄	54,166 0 0
April	5,530 ³ / ₄	59,261 7 6
May	5,964 ³ / ₄	68,473 10 9

There were 47 contributing areas, the principal of which were as follows (an * denoting Wolmaransstad district, the remainder being in the Bloembhof district):

	Carats.	Value.
Kameelkuil	1,294 ¹ / ₂	£16,538 15 0
Blesbokfontein	981	10,437 12 6
*Rietkuil—Uys	1,047 ¹ / ₄	10,210 13 3
*Kareepan—Lavine	487 ³ / ₄	5,081 10 0
London	280 ¹ / ₄	3,365 0 0
Gondplaats	192 ¹ / ₂	2,594 10 0
*Kareepan—Outspan	191 ³ / ₄	2,334 10 0
*Rietkuil—Odendaal	192 ¹ / ₄	2,090 7 6
Bloemheuvel	90 ³ / ₄	1,858 10 0
Bloembhof	168	1,802 5 0
*Leeuwfontein	141 ¹ / ₄	1,787 15 0
*Cyfergat	130 ¹ / ₂	1,674 0 0
Christiana	135	1,404 17 6
Schweizer-Reneke	113	1,369 15 0
Mooifontein	88	1,082 5 0
Naauwpoort	46	665 0 0

The Lonely Mine.

The report of the Lonely for the year to December 31 last states that the main incline shaft has been sunk during the year to a depth of 2,190 ft. below the 9th level. A considerable amount of further development has been carried out on the 13th, 14th, 15th, 16th, 17th, 18th and 19th levels, and two new levels, the 20th and 21st, have been opened up. Excellent results have been obtained practically throughout the whole of these levels, considerable lengths of high-grade ore having been opened up. Driving is still being continued in the southern faces of all the levels below the 15th, and the consulting engineer considers the prospect of further good developments in these levels is most promising. As the result of the past year's development the ore reserves at December 31 show a considerable increase both in tonnage and value over those of the previous year, the reserves at the end of 1918 being estimated at 176,097 tons of a value of 24.1 dwts., as against 145,616 tons of a value of 18.69 dwts. on December 31, 1917. Owing to the outbreak of influenza at the mine in October last, milling operations were considerably curtailed during the last three months of the year. The total tonnage crushed during the twelve months was 54,320 tons, against 57,870 tons put through the mill during the previous year, and the yield was 49,560 ozs. of a value of £209,712, as against 52,627 ozs. of a value of £221,299 during 1917. The total working expenses, including maintenance and administration expenses in London and Rhodesia, amounted to £107,247, equivalent to 39s. 5d. per ton crushed. Royalty paid to the British South Africa Company amounted to £10,616, bringing the total cost up to 43s. 4d. per ton crushed. The accounts show a realised profit for the year of £91,294, and £24,355 was brought in, making £115,649, which has been dealt with as follows: Dividends paid, Nos. 16 and 17 together, 25 per cent., less tax, £48,273; provision for British income tax and additional remuneration to directors on dividends declared, £21,812; appropriated for depreciation and sundry amounts written off, £15,969; balance of unappropriated profits, £29,595.

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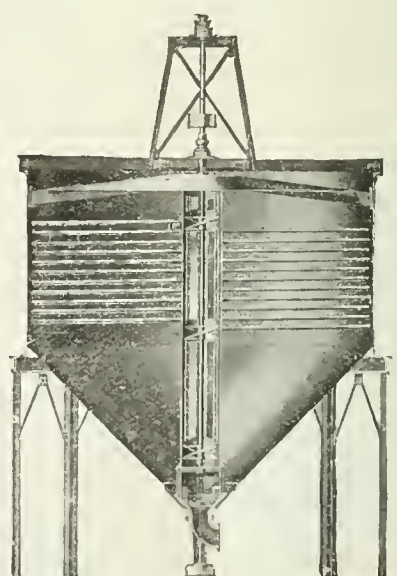
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JOHANNESBURG



THE VALUE OF A FREE MARKET FOR RAND GOLD.

Disinterested Advice from a London Authority—A Striking Object Lesson.

VALUABLE, because disinterested, advice to this country in regard to the disposal of its gold was given by Mr. F. A. Govett at the meeting of the Ivanhoe Gold Corporation in London in mail week. *Inter alia*, he said:

Last summer, at the meeting of the Lake View Mine, I delivered a dissertation on gold, which was then under consideration by a Commission which had been appointed. I do not propose to reproduce that here, but I wish to add a few notes to what I said.

THE COMMISSION'S REPORT ON GOLD.

It was then hoped that the Commission would recommend that, at the worst, some small premium should be granted for the production of gold within the Empire on its purchase by the Imperial Government; this, indeed, was all that I considered myself was either justifiable or desirable, for I do not think that the simple fact that low-grade mines could no longer produce at a profit, or that gold was depreciated in relation to commodities, was any justification for relief, or likely to get relief; but the fact that this country badly needs gold to help redress its adverse balance of trade, I did, and do, consider ample justification for the payment of a small premium on purchase, to take the place of the commandeering of our product, even with the consent of the Overseas Dominions in which it was produced, and paying for it at the par of depreciated paper. This, indeed, has been the rule under D.O.R.A. since the commencement of the war, for we have not been allowed to sell to other countries, and thereby get the increased profit represented by exchange; that is, to sell our produce in the best market. We have been condemned to sell here at the par of English paper, and that was our only real justification for our claim for fair treatment. If they would not give us some small premium, they should logically and fairly have allowed us to sell to other countries. It is not of relief at all of which I wish to speak. So far as it relates to giving relief to a struggling industry, the Commission was probably right in turning down the appeal; but it was not, I think, on these grounds that it really was turned down.

A QUESTION OF "PARAMOUNT IMPORTANCE."

It appears that it was the considered judgment of the Commission that it was not of importance, or at any rate of sufficient importance, for any steps to be taken in order that the country should be made sure of getting the gold, which they could have certainly done by conceding the smallest premium. This I think was not wise. What is commonly needed by humanity to bring conviction is an object lesson, and just as Labour appears not to be convinced without an object lesson that Socialism and Syndicalism are impracticable, and that all vast changes in social and industrial conditions can only be the work of gradual growth in the sociological education of all classes, and cannot be abruptly established by violence and revolution, and even the object-lesson of Russia is too far off, and not sufficient, so an object-lesson is needed here to convince the experts on gold that at this juncture, and for a long period after the close of War, the control and ownership of gold production is of paramount importance. This country is now faced, and I think increasingly will be faced, for many years, with an adverse balance of trade. We can now, with the present exchange, only buy and pay for, say, 4.66 dollars or thereabouts of American goods with every British pound in paper, but if we had the gold we could pay for 4.87 dollars worth of goods instead, less the cost of exporting gold. This is, of course, a loss of only 5 per cent., which does not sound enormous, but when your indebtedness runs into hundreds of millions its importance is apparent. In Spain the position has been and is far worse than that. For quite a period it cost us 30s. or thereabouts to pay a debt of 20s. in Spain, which was always payable by 20s. in gold. Is not, then, the possession of gold of paramount importance?

THE OBJECT LESSON.

Now, then, for the object-lesson. At last, in Australia, a Daniel has come to judgment, and for an experimental three months has allowed the export of gold to other countries instead of England. The day that this was first, somewhat obscurely, reported in the Press I cabled out to avail ourselves of this, and through a combination in Melbourne we have actually been making some small additional profit from this source. But England is not getting the gold. That is the object-lesson. Probably this Australian total alone is of too small amount to prove an effective object-lesson, though there are some signs that it has been noticed; but, if the Cape would have the sense to follow suit, and stop the commandeering of its gold for the profit of this country, the object-lesson would become a good deal more effective. I commend this suggestion to the care of the mining financiers and those who look after the political welfare of the Cape. At present we are limited in our sales to Allied countries, but this does not seem sense, for once we abandon the principle of commandeering, there would seem no reason why we should not get the highest price by selling, for instance, to Spain: not to enemies, of course, and there is this to be said—that in a measure this would help this country, for as soon as Spain obtains the gold she wants, the exchange would rise to the benefit of this country on her imports.

Wankie Colliery.

The report of the Wankie Colliery Company for the year ended 31st August last states that the capital of the company has been increased from £410,000 to £600,000 by the creation of 380,000 shares of 10s. each. Of these 324,190 have been issued at the date of this report and are fully paid. Pursuant to the trust deed the company paid off on 31st December last £7,000 of the six per cent. first mortgage debentures, leaving £63,000 outstanding. Operations, after allowing for depreciation, resulted in a profit of £67,804. Out of this excess profits duty has to be provided and, pending agreement with the Inland Revenue authorities, this has been estimated at £11,996, leaving, with £7,761 brought forward, £63,569 at credit of profit and loss. The directors recommend a dividend of 10 per cent., less income tax. Under the powers conferred upon them by the articles of association, the directors paid to shareholders two interim dividends, each of 5 per cent., in respect of the year ended 31st August—namely, on 24th June and 1st November last—being the 10 per cent. for the year referred to. The sales of coal and coke amounted to 327,949 tons and 80,494 tons respectively. During the year 553,856 tons have been mined and raised to the surface. The coal reserves, as proved by development work, amount to 5,180,000 tons. Fifty-six new retort ovens have been erected. Coal sales increased by 20,466 tons and coke sales by 9,667 tons.

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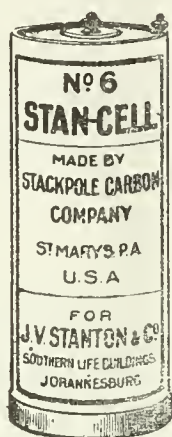
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TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Distributions for First Half of Current Year—A Valuable Synopsis of Returns—Crushing and Profit & Loss Returns for Six Months—Ore Reserves and Dividends—An Interesting Table—Compiled from Chamber of Mines' Statements.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax. Miners' Pithosis Contributions, etc.

AURORA WEST

Capital: £106,353 (10s. shares).

Ore Reserves: 212,290 tons 5.6 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	10,700	10,789	20 0	25 6	*2,934	5 6	
1919.							
January	12,000	10,985	18 4	23 8	*3,287	5 6	
February	11,700	11,885	20 4	25 5	*2,994	5 1	
March	15,000	15,501	20 8	21 5	*470	0 7	
April	13,800	13,877	20 1	23 3	*2,229	3 3	
May	14,800	16,732	22 6	22 5	45	0 1	

* Loss.

BANTJES CONSOLIDATED.

Capital: £502,306.

Ore Reserves: 85,000 tons 6.3 dwts. Crushing suspended.

BRAKPAN MINES.

Capital: £850,000; issued £791,100.

Ore Reserves: 2,718,000 tons 8.7 dwts. Dividends, 1918: 32½ p.c.
June, 1919: 12½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	44,000	85,052	38 7	26 2	26,440	12 0	
1919.							
January	42,000	86,241	41 0	25 11	30,874	14 8	
February	41,300	81,850	39 7	25 1	29,176	14 2	
March	51,500	95,103	36 10	24 7	30,724	11 11	
April	47,500	89,606	37 8	24 8	30,407	12 10	
May	48,800	120,287	49 3	24 10	30,503	12 6	

CITY DEEP.

Capital: £1,250,000.

Ore Reserves: 3,342,700 tons 9.6 dwts. Dividends, 1918: 27½ p.c.
June, 1919: 10 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	45,000	91,127	40 6	29 7	22,728	10 1	
1919.							
January	45,500	91,415	40 2	28 11	24,887	10 11	
February	40,000	78,825	39 5	30 5	17,510	8 9	
March	50,000	100,034	40 0	27 9	29,368	11 9	
April	48,500	98,322	40 7	28 0	29,199	12 0	
May	50,000	98,896	39 7	28 5	27,187	11 0	

CITY AND SUBURBAN.

Capital: £1,360,000 (£4 shares).

Ore Reserves: 348,200 tons 7.8 dwts. Dividend, 1918: 1½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	15,945	31,624	39 8	39 2	*234	0 4	
1919.							
January	15,579	28,765	36 11	39 9	*2,793	3 7	
February	13,947	24,437	34 9	40 10	*4,368	6 3	
March	16,159	25,474	29 1	38 2	*3,758	7 2	
April	17,343	28,765	32 8	35 6	*2,423	2 9	
May	18,270	32,410	35 6	35 0	76	0 1	

* Loss.

CONSOLIDATED LANGLAAGTE.

Capital: £950,000.

Ore Reserves: 2,103,000 tons 6.2 dwts. Dividends, 1918: 5 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	37,400	47,587	24 6	20 9	8,835	4 9	
1919.							
January	41,300	51,644	25 0	20 9	8,859	4 3	
February	41,000	49,414	23 11	19 9	8,870	4 4	
March	47,200	56,074	23 7	19 2	10,848	4 7	
April	45,000	55,547	24 6	19 10	10,839	4 10	
May	45,800	56,605	23 11	19 6	11,877	5 2	

CONSOLIDATED MAIN REEF.

Capital: £1,217,602.

Ore Reserves: 1,125,870 tons 7.3 dwts. Dividends, 1918: 2½ p.c.
June, 1919: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	43,420	65,436	30 2	27 5	4,833	2 3	
1919.							
January	44,310	68,367	30 10	27 7	6,551	2 11	
February	41,610	67,199	31 10	28 9	6,417	3 1	
March	50,140	74,803	29 10	26 0	8,636	3 5	
April	47,300	75,185	13 11	28 1	7,753	3 3	
May	50,230	75,733	30 2	26 1	8,587	3 5	

CROWN MINES.

Capital: £940,106 (10s. shares).

Ore Reserves: 8,298,100 tons 6.4 dwts. Dividends, 1918: 20 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	132,000	195,379	29 5	25 11	21,596	3 3	
1919.							
January	140,000	205,110	29 4	26 4	18,280	2 7	
February	124,000	183,948	29 6	27 5	12,970	2 1	
March	160,000	222,861	27 9	24 3	25,468	3 2	
April	158,000	219,786	27 10	23 5	32,107	4 1	
May	164,000	227,861	27 9	23 0	37,167	4 7	

DURBAN ROODEPOORT DEEP.

Capital: £440,000.

Ore Reserves: 1,078,500 tons 6.5 dwts. Dividend, 1918: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	26,200	38,969	29 5	26 9	3,065	2 4	
1919.							
January	23,200	34,908	30 1	30 3	*531	0 5	
February	25,000	37,563	30 1	28 1	1,834	1 6	
March	27,700	40,795	29 5	27 2	2,698	1 11	
April	25,200	35,481	28 0	27 11	*156	0 1	
May	24,100	35,490	29 5	29 9	*561	0 6	

* Loss.

EAST RAND PROPRIETARY MINES.

Capital: £2,445,897.

Ore Reserves: 2,268,000 tons 6.5 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	115,000	137,792	24 0	21 5	11,802	2 1	
1919.							
January	115,000	146,424	25 3	23 0	12,606	2 2	
February	103,500	134,458	26 6	24 0	8,734	1 8	
March	112,000	150,004	26 9	25 1	8,030	1 5	
April	110,000	139,814	25 5	23 4	10,020	1 10	
May	110,000	141,313	25 8	24 8	6,079	1 1	

FERREIRA DEEP.

Capital: £980,000.

Ore Reserves: 932,400 tons 8.0 dwts. Dividends, 1918: 22½ p.c.
March, 1919: 7½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	35,500	57,259	32 3	24 11	11,848	6 8	
1919.							
January	37,240	62,021	32 4	24 10	13,639	7 4	
February	31,700	49,690	30 8	26 7	6,962	4 5	
March	37,000	60,505	31 6	25 7	10,289	5 7	
April	32,300	56,941	35 3	25 11	14,367	8 11	
May	33,600	52,455	31 3	24 7	12,758	7 7	

GEDULD PROPRIETARY.

Capital: £970,000.

Ore Reserves: 2,510,000 tons 7.5 dwts. Dividends, 1918: 1¼ p.c.
1919: Distribution of enemy shares.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	42,500	62,471	29 5	19 9	20,255	9 6	
1919.							
January	42,900	63,402	29 7	20 0	20,361	9 6	
February	39,500	60,046	30 5	19 10	19,456	9 10	
March	43,500	63,554	29 3	19 2	20,363	9 4	
April	42,000	63,113	30 1	19 6	20,896	9 11	
May	43,030	65,989	30 8	20 10	20,294	9 6	

GELDENHUIS DEEP.

Capital: £585,753.

Ore Reserves: 1,549,600 tons 5.9 dwts. Dividends, 1918: 7½ p.c.
June, 1919: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
1918.							
December	47,000	55,679	23 8	23 9	1,348	0 7	
1919.							
January	47,400	55,968	23 7	24 0	*949	0 5	
February	42,700	50,514	23 5	26 1	*5,489	2 7	
March	53,100	61,341	23 1	22 3	1,651	0 7	
April	47,500	54,417	22 11	24 6	*1,018	1 8	
May	49,500	58,368	23 7	22 10	1,137	0 6	

* Loss.

GOVERNMENT AREAS (MODDER).

Capital: £1,400,000.

Ore Reserves: 9,115,000 tons 8.0 dwts. Dividends, 1918: 27½ p.c.
June, 1919: 17½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	93,000	171,838	36 6	21 11	69,600	15 0	
1919.							
January ...	106,500	188,344	35 1	21 5	71,431	11 9	
February ...	101,000	179,658	35 7	21 9	69,591	13 9	
March ...	111,000	199,516	34 5	21 0	79,659	14 0	
April ...	116,000	204,448	35 0	20 8	81,479	14 7	
May ...	125,000	218,788	34 5	20 2	92,762	14 10	

GLYNN'S LYDENBURG.

Capital: £170,000.

Dividends, 1918: 16¼ p.c. January, 1919: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
November ...	540	1,096	—	—	*1,330	—	
December ...	1,318	2,239	34 0	44 2	*726	11 0	
1919.							
January ...	2,781	1,126	29 8	—	20	0 2	
February ...	3,160	6,168	39 0	28 7	1,516	9 7	
March ...	3,770	5,841	31 0	26 4	751	4 0	
May ...	3,885	7,127	36 8	31 7	948	4 11	

* Loss.

JUPITER.

Capital: £1,014,200.

Ore Reserves: 674,000 tons 5.98 dwts. Dividends, 1918: 1¼ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	23,200	28,961	25 0	22 11	1,913	1 8	
1919.							
January ...	26,400	27,908	21 2	21 1	*330	0 3	
February ...	22,100	24,310	22 0	23 3	*1,702	1 6	
March ...	24,400	26,761	21 11	23 1	*1,774	1 5	
April ...	21,200	23,953	22 7	25 8	*3,590	3 5	
May ...	23,600	24,348	20 7	23 5	*3,585	3 0	

* Loss.

KNIGHT CENTRAL.

Capital: £900,000.

Ore Reserves: 275,000 tons 6.9 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	17,350	27,355	30 1	29 2	1,180	1 9	
1919.							
January ...	17,900	27,377	30 7	29 5	996	1 1	
February ...	20,000	28,957	26 8	27 8	*129	0 5	
March ...	19,100	25,639	26 10	29 2	*2,495	2 7	
April ...	20,000	30,367	29 7	29 3	706	0 8	
May ...	22,500	26,565	23 7	30 0	*7,183	6 8	

* Loss.

KNIGHTS DEEP

Capital: £713,526

Ore Reserves: 1,671,000 tons 4.43 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	78,000	61,324	15 9	17 6	*7,911	2 0	
1919.							
January ...	85,300	70,262	16 6	16 7	*461	0 1	
February ...	77,600	68,312	17 7	17 8	1,014	0 3	
March ...	88,200	76,175	17 3	16 11	608	0 2	
April ...	82,900	71,451	17 3	17 3	*1,189	0 3	
May ...	93,100	74,399	16 0	16 5	*3,180	0 8	

* Loss.

(d) In addition, £1,448 taken from reserve.

LANGLAAGTE ESTATE.

Capital: £886,500.

Ore Reserves: 1,632,200 tons 6.9 dwts. Dividends, 1918: 12½ p.c.
June, 1919: 7½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	41,190	54,783	21 9	18 10	13,113	5 11	
1919.							
January ...	45,170	55,654	24 3	18 10	13,651	5 9	
February ...	38,160	48,917	25 8	20 1	10,506	5 6	
March ...	12,000	55,131	26 3	20 6	12,005	5 9	
April ...	40,000	52,332	25 10	21 2	10,037	5 0	
May ...	42,200	53,107	25 4	21 0	9,625	4 3	

* Loss.

LUIPAARDSVLEI ESTATE.

Capital: £172,012.

Ore Reserves: 645,000 tons 5.5 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	19,350	20,122	20 8	21 6	*1,051	1 1	
1919.							
January ...	19,560	21,391	21 10	22 6	*888	0 11	
February ...	18,860	20,950	22 3	22 2	*230	0 3	
March ...	21,000	20,687	19 8	21 6	*2,207	2 1	
April ...	20,000	20,797	20 10	22 3	*1,598	1 7	
May ...	20,850	22,581	21 8	20 11	481	0 6	

* Loss.

MEYER AND CHARLTON.

Capital: £200,000.

Dividends, 1918: 110 p.c. June, 1919, 50 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	13,635	39,763	58 0	23 0	23,518	34 6	
1919.							
January ...	12,750	39,178	61 11	25 8	22,545	35 4	
February ...	11,625	33,986	58 6	24 11	19,045	32 9	
March ...	14,000	39,368	56 3	23 3	22,508	32 9	
April ...	13,640	40,082	58 9	23 5	23,510	34 6	
May ...	11,150	40,571	56 2	23 1	23,306	32 3	

MODDER "B."

Capital: £700,000.

Ore Reserves: 3,378,000 tons 9.2 dwts. Dividends, 1918: 82½ p.c.
June, 1919, 45 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	57,000	113,423	39 7	20 6	52,703	18 6	
1919.							
January ...	58,000	127,755	44 1	21 7	65,026	22 5	
February ...	48,000	115,691	48 2	22 11	60,342	25 2	
March ...	54,000	124,085	46 0	22 6	63,024	23 4	
April ...	51,000	121,375	44 11	22 3	61,062	22 7	
May ...	55,000	120,487	43 10	20 11	62,001	22 7	

MODDER DEEP.

Capital: £500,000.

Ore Reserves: 3,450,000 tons 8.8 dwts. Dividends, 1918: 97½ p.c.
1919: 50 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	40,900	84,577	41 0	18 0	47,515	23 3	
1919.							
January ...	44,400	88,888	40 0	16 11	51,013	23 0	
February ...	39,700	83,128	41 11	16 0	47,148	23 9	
March ...	42,800	89,100	41 8	17 7	51,154	23 11	
April ...	41,100	89,245	43 5	18 1	51,818	25 3	
May ...	44,200	93,170	42 2	17 7	53,955	24 5	

NEW GOCH.

Capital: £550,000.

Ore Reserves: 111,670 tons 5.6 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	15,150	13,045	17 0	18 2	*501	0 8	
1919.							
January ...	11,300	13,491	17 10	19 3	*98	0 2	
February ...	12,550	12,684	19 11	21 0	*513	0 10	
March ...	15,500	11,200	17 6	19 0	*641	1 0	
April ...	16,600	13,771	16 0	17 2	*580	0 8	
May ...	16,700	13,631	15 9	17 5	*524	0 7	

* Loss.

NEW HERIOT.

Capital: £115,000.

Ore Reserves: 223,420 tons 7.12 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	11,100	16,439	29 6	27 8	791	1 5	
1919.							
January ...	11,900	15,067	25 4	26 11	*1,128	1 11	
February ...	10,100	14,153	28 0	28 8	*495	1 0	
March ...	11,190	16,813	30 1	27 7	1,167	2 1	
April ...	10,610	14,850	28 0	29 0	*718	1 4	
May ...	12,180	16,290	26 9	25 11	334	0 6	

* Loss.

NEW KLEINFONTEIN.

Capital: £1,300,000.

Ore Reserves: 2,018,000 tons 5.78 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
1918.							
December ...	47,200	57,569	23 8	25 2	*3,287	1 5	
1919.							
January ...	45,740	57,769	25 3	27 7	*6,145	2 8	
February ...	53,500	64,120	21 0	23 4	712	0 3	
March ...	66,000	77,920	23 7	23 1	598	0 2	
April ...	57,900	72,262	25 0	24 2	1,653	0 4	
May ...	59,480	71,557	24 1	24 7	*2,786	0 11	

* Loss.

NEW MODDERFONTEIN.

Capital: £1,400,000 (£4 shares).

Ore Reserves: 9,000,000 tons 8.6 dwts. Dividends, 1918: 51½ p.c.
June, 1919: 32½ p.c.

		Revenue.		Cost.		Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
December	70,000	159,370	45 6	20 3	85,062	24 4	
1919.							
January	76,000	170,181	44 9	20 3	91,274	24 0	
February	78,000	168,843	43 3	19 1	93,173	23 11	
March	88,000	185,677	42 2	20 1	95,168	21 7	
April	82,000	175,300	42 9	20 3	90,131	22 0	
May	84,500	179,709	42 6	20 3	92,153	21 10	

NEW PRIMROSE.

Capital: £325,000.

Ore Reserves: 65,690 tons 6.1 dwts. Dividends, June, 1919: 5 p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	17,800	15,993	18 0	16 7	1,208	1 4
1919.						
January	17,300	16,345	18 11	17 7	1,138	1 4
February	15,600	15,317	19 0	18 1	1,211	1 7
March	18,000	16,502	18 4	16 11	1,280	1 5
April	19,000	17,161	18 1	16 1	1,017	2 0
May	20,300	18,652	17 11	16 0	2,423	2 5

NEW UNIFIED.

Capital: £250,000.

Ore Reserves: 1,808,840 tons 6.5 dwts. Dividends, 1918: 10 p.c. June, 1919: 5 p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	13,100	12,165	18 7	14 10	2,445	3 9
1919.						
January	13,400	12,293	18 4	15 1	2,189	3 3
February	12,300	11,040	17 11	15 1	1,750	2 10
March	13,700	12,318	17 2	15 0	2,060	3 0
April	12,000	11,855	19 9	16 8	1,852	3 1
May	12,200	12,025	19 9	16 8	1,844	3 0

NOURSE MINES.

Capital: £827,821.

Ore Reserves: 1,513,600 tons 6.8 dwts. Dividends, 1918: 3½ p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	31,200	44,852	28 6	30 5	*3,610	2 4
1919.						
January	35,000	50,098	28 8	27 11	561	0 4
February	32,600	47,256	28 8	28 5	310	0 2
March	40,600	57,442	28 4	26 7	3,175	1 7
April	38,100	54,307	28 6	27 6	1,426	0 9
May	40,900	56,210	27 2	25 10	2,582	1 3

* Loss.

RANDFONTEIN CENTRAL.

Capital: £4,500,000.

Ore Reserves: 4,254,000 tons 6.8 dwts.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	118,200	128,363	21 5	23 9	*11,891	2 0
1919.						
January	143,000	160,900	22 6	21 4	8,293	1 2
February	135,000	153,190	22 5	21 7	7,603	1
March	143,000	166,439	23 3	21 9	11,020	1 6
April	138,000	162,705	23 7	22 3	9,149	1 4
May	144,000	166,163	22 9	21 9	9,359	1 1

* Loss.

ROBINSON.

Capital: £2,750,000 (£5 shares).

Ore Reserves: 322,000 tons. Dividends, 1918: 2½ p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	36,100	44,248	24 6	21 6	4,467	2 6
1919.						
January	38,500	45,442	23 7	21 0	4,779	2 6
February	35,800	41,857	23 5	20 11	4,135	2 4
March	40,000	43,709	21 10	20 0	3,259	1 8
April	36,300	42,189	23 3	21 10	2,137	1 2
May	40,900	42,035	20 7	19 11	2,453	1 2

* Loss.

ROBINSON DEEP.

Capital: 681,807 "B" shares, £1 each, and 500,000 "A" shares, 1s. each.

Ore Reserves: 1,632,000 tons 6.9 dwts. Dividends, 1918: 23 p.c. per "A" share.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	39,400	51,719	27 9	28 0	*1,450	0 9
1919.						
January	35,200	51,075	29 0	31 8	*5,351	3 0
February	36,000	49,834	27 8	28 1	*1,313	0 9
March	44,200	59,693	27 0	25 2	3,250	1 6
April	45,300	62,578	27 8	25 2	4,826	2 2
May	52,200	73,520	28 1	24 3	9,112	3 6

* Loss.

ROODEPOORT UNITED.

Capital: £460,000.

Ore Reserves: 223,000 tons 6.02 dwts.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	24,000	22,589	17 11	21 1	2,460	2 1
1919.						
January	24,000	23,736	19 4	20 8	*966	9 10
February	23,300	22,797	19 1	20 7	*1,049	0 11
March	25,100	22,088	17 5	20 0	*2,962	2 4
April	24,200	23,231	19 0	20 2	*1,084	0 11
May	23,800	21,931	18 4	20 7	*1,994	1 8

* Loss.

ROSE DEEP.

Capital: £700,000.

Ore Reserves: 2,909,520 tons 5.3 dwts. Dividends, 1918: 17½ p.c. June, 1919: 7½ p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	44,200	51,487	23 3	20 2	5,663	2 7
1919.						
January	48,000	54,910	22 10	19 6	7,846	3 3
February	47,500	55,751	23 6	19 7	8,519	3 7
March	54,000	60,505	22 5	18 7	9,570	3 7
April	53,000	63,261	23 10	18 6	13,892	5 3
May	51,500	64,396	25 0	19 2	14,257	5 6

SIMMER AND JACK.

Capital: £3,000,000.

Ore Reserves: 1,538,000 tons 5.6 dwts. Dividend, 1918: 1¼ p.c. June, 1919: 1¼ p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	45,700	49,554	21 7	20 6	5,803	2 6
1919.						
January	44,100	49,057	22 3	21 2	2,501	1 2
February	37,100	42,643	23 0	22 6	2,365	1 3
March	41,700	48,059	21 6	22 2	*868	0 5
April	46,800	46,589	19 11	21 0	*3,468	1 6
May	51,800	59,859	21 7	19 5	5,228	1 11

(d) In addition, £1,035 taken from reserve.

(e) In addition, £2,121 taken from reserve.

SIMMER DEEP.

Capital: £1,650,000.

Ore Reserves: 932,000 5.02 dwts.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	43,100	48,420	22 6	21 8	911	0 5
1919.						
January	43,300	48,135	22 3	22 5	*947	0 5
February	37,900	42,622	22 6	23 10	3,109	1 8
March	40,600	41,645	20 6	21 2	*7,903	3 11
April	38,600	39,309	20 4	25 0	*9,132	4 11
May	43,700	42,533	19 5	22 9	*7,771	3 7

* Loss.

SUB NIGEL.

Capital: £775,000.

Ore Reserves: 387,000 tons 10.3 dwts. Dividends, 1918: 11½ p.c. June, 1919: 5 p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
November	9,100	26,349	57 11	38 2	8,466	18 7
December	9,700	25,746	53 1	36 6	7,569	15 7
1919.						
January	9,100	26,149	57 6	41 2	7,105	15 7
February	8,500	24,399	56 6	37 10	7,956	18 9
March	9,400	23,643	50 4	40 1	5,828	12 5
May	10,300	25,359	49 3	40 7	4,121	8 0

SPRINGS MINES.

Capital: Authorised. £1,500,000; registered. £1,300,000; issued. £1,153,500.

Ore Reserves: 2,256,062 tons 8.69 dwts. Dividends, 1918: 22½ p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	28,800	68,108	47 4	25 9	30,200	21 0
1919.						
January	33,350	72,450	43 5	25 3	30,287	18 2
February	35,300	68,022	38 6	24 3	25,271	14 1
March	37,350	71,625	38 4	25 2	23,729	12 8
April	34,940	67,721	37 9	25 6	22,771	13 0
May	36,070	68,261	37 1	24 7	23,160	12 10

TRANSVAAL G.M. ESTATES.

Capital: £604,225.

Dividends, 1918: 6¼ p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
November	475	3,075	—	—	*5,212	—
December	3,550	4,915	27 8	64 1	*6,508	36 8
1919.						
January	11,380	14,155	25 5	29 9	*2,780	4 11
February	12,850	18,771	29 3	26 9	1,167	1 10
March	15,910	25,588	32 2	24 9	5,310	6 8
May	16,830	21,777	29 5	22 8	5,555	6 7

* Loss.

VAN RYN.

Capital: £500,000.

Ore Reserves: 1,317,816 tons 5.6 dwts. Dividends, 1918: 10 p.c. 1919: June, 5 p.c.

1918.	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
December	32,300	32,550	19 10	17 6	1,063	2 6
1919.						
January	32,600	32,011	19 6	16 11	1,133	2 6
February	34,100	31,599	20 4	17 6	1,140	2 8
March	34,000	33,689	19 5	17 0	1,507	2 8
April	35,150	33,956	18 7	16 7	4,514	2 7
May	35,900	34,827	19 5	16 5	5,133	2 10

VAN RYN DEEP.

Capital : £1,196,892.							
Ore Reserves : 2,145,759 tons 9.0 dwts. Dividends, 1918 : 45 p.c.							
June, 1919 : 22½ p.c.							
		Revenue.		Cost.	Profit.		
1918	Tons.	£	s. d.	s. d.	£	s. d.	
December ...	40,800	94,589	46 3	23 2	47,145	23 1	
1919.							
January ...	42,900	95,718	41 8	22 8	47,179	22 0	
February ...	43,350	94,992	41 5	21 11	47,536	21 11	
March ...	50,000	105,632	42 0	20 10	53,456	21 5	
April ...	47,400	103,560	43 8	21 2	53,288	22 6	
May ...	49,600	103,192	41 9	20 3	53,225	21 6	

VILLAGE DEEP.

Capital : £1,060,671.							
Ore Reserves : 2,327,200 tons 6.3 dwts. Dividends, 1918 : 3½ p.c.							
June, 1919 : 7½ p.c.							
		Revenue.		Cost.	Profit.		
1918	Tons.	£	s. d.	s. d.	£	s. d.	
December ...	46,800	65,139	27 7	24 2	6,919	2 11	
1919.							
January ...	48,200	65,886	27 4	25 5	4,262	1 9	
February ...	45,800	59,629	26 0	24 7	2,580	1 2	
March ...	54,000	69,166	25 7	24 6	2,089	0 9	
April ...	43,400	63,176	29 1	27 10	2,129	1 0	
May ...	47,200	68,425	29 0	26 2	5,844	2 6	
* Loss.							

VILLAGE MAIN REEF.

Capital : £472,000.							
Ore Reserves : 628,150 tons 7.1 dwts. Dividends, 1918 : 10 p.c.							
June, 1919 : 1 Village Deep share for 1 Village Main Reefs.							
		Revenue.		Cost.	Profit.		
1918	Tons.	£	s. d.	s. d.	£	s. d.	
December ...	17,600	25,877	29 4	25 10	2,508	2 10	
1919.							
January ...	18,200	25,729	28 2	25 11	2,424	2 9	
February ...	17,400	21,795	25 8	23 11	1,188	1 5	
March ...	18,790	24,471	25 8	23 8	1,960	2 1	
April ...	17,700	23,239	26 0	24 6	1,216	1 4	
May ...	19,100	25,835	26 5	23 6	3,189	3 3	

WEST RAND CONSOLIDATED.

Capital : £2,001,424.							
Ore Reserves : 1,208,300 tons 6.1 dwts.							
		Revenue.		Cost.	Profit.		
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
December ...	28,400	32,117	22 6	23 6	*1,395	1 0	
1919.							
January ...	30,500	36,259	23 8	22 11	1,159	0 9	
February ...	28,600	33,362	23 2	23 1	111	0 1	
March ...	32,800	37,886	23 1	22 2	1,295	0 9	
April ...	32,000	38,421	23 9	23 1	1,159	0 9	
May ...	33,120	39,053	23 7	22 7	1,408	0 10	
* Loss.							

WITWATERSRAND.

Capital : £475,000; issued, £469,625.							
Ore Reserves : 1,390,000 tons 6.0 dwts. Dividends, 1918 : 15 p.c.							
June, 1919 : 7½ p.c.							
		Revenue.		Cost.	Profit.		
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
December ...	33,321	37,851	22 6	20 3	4,086	2 5	
1919.							
January ...	35,500	38,157	21 2	19 10	2,881	1 7	
February ...	30,750	34,942	22 9	21 1	2,496	1 7	
March ...	35,100	39,376	22 5	19 19	4,523	2 7	
April ...	32,500	40,732	25 1	21 7	5,609	3 5	
May ...	35,500	42,783	24 1	20 11	5,604	3 2	

WITWATERSRAND DEEP.

Capital : £550,000.							
Ore Reserves : 953,665 tons 8.3 dwts.							
		Revenue.		Cost.	Profit.		
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
December ...	26,400	32,644	24 4	26 2	*2,577	1 11	
1919.							
January ...	27,580	35,800	26 0	27 7	*1,958	1 5	
February ...	27,300	32,928	24 1	26 1	*3,102	2 3	
March ...	32,700	37,822	23 2	23 5	*998	0 7	
April ...	30,150	37,049	24 1	21 7	*921	0 7	
May ...	31,600	36,280	23 0	23 9	1,979	1 3	
* Loss.							

WOLHUTER.

Capital : £860,000.							
Dividends, 1918 : 6½ p.c. April, 1919 : 2½ p.c.							
		Revenue.		Cost.	Profit.		
1918.	Tons.	£	s. d.	s. d.	£	s. d.	
December ...	27,300	37,308	27 4	22 11	5,278	3 10	
1919.							
January ...	29,250	35,792	24 6	21 5	4,345	3 0	
February ...	26,600	33,625	24 11	27 0	3,970	3 0	
March ...	28,700	36,603	25 6	22 9	3,579	2 6	
April ...	28,500	35,791	25 1	22 7	3,238	2 3	
May ...	39,000	37,877	25 3	22 7	3,598	2 5	

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

July 17.—Modder Deep Levels, Ltd., Extraordinary General Meeting.
Consolidated Building, 11.30.

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THE WEEK IN THE SHAREMARKET.

Slight Improvement—Crown Diamonds Advance.

On Friday morning, though business was still slack, some few stocks made satisfactory advances, notably Crown Diamonds, Sub Nigels and Randfonteins. Brakpans, Springs and Nourse Mines were weaker. The following are the changes in prices:—Sales: Crown Diamonds, 25s.; Modder Easts, 19s. 9d.; three-year options, 3s. 2d.; New Modders, £27 2s. 6d.; Sub Nigels, 21s.; 10s. paid, 11s.; West Springs, 22s.; options, 5s. 9d. and 5s. 6d. Buyers and sellers: Brakpans, 64s., 65s. 6d.; Coronation Freeholds, 2s. 1d., 2s. 3d.; Ferreira Deeps, 11s. seller; Lace Props, 16s. 3d. buyer; Modder Bs., £8 3s. 9d., £8 5s.; Nourse Mines, 11s. seller; Pretoria Cements, 68s. 9d., 69s. 6d.; Randfonteins, 15s. 6d., 16s.; Springs, 47s. 3d., 47s. 6d. The new Modder East Debentures (6½ per cent.) have been dealt in at £3 premium and are buyers at £2 10s. premium. The market continued firm all day, with the exception of Leeuwpoots, which, for some unaccountable reason fell to 22s. 10½d., a drop of 1s. on the morning price. At the opening on Saturday Crown Diamonds were done at 25s. 6d. The only alterations in prices at the call were a further falling off in Springs and also in Swazi Tins. On Monday prices were generally firm on call, with the exception of Swazi Tins, which were sold at 11s. Heriots were also weak at 8s. 6d. The Modder stocks were all better. Springs improved to 48s. 3d. after the call. There was some demand for Hume Pipes, which advanced them to 27s. sales and buyers. In the course of the morning the Modder stocks improved still further. The market closed firm. On Tuesday prices were well maintained with an upward tendency in the better class goods. Business was also fairly active, though no large transactions were put through. The opening on Wednesday showed more activity. The following sales were recorded: Leeuwpoots, 23s. 3d.; Modder Easts, 20s. 6d.; New States, 24s. 9d.; and Compound Diamonds, 7s. 6d. Prices were again firm at the call. Alkalis rose from 12s. 6d., the previous day's figure, to 18s., and subsequently to 19s. 3d.—20s. Crown Diamonds are on the up trend again and made 26s. 3d. after lunch. On Thursday the better class stocks were neglected. Modder Deeps, Van Ryn Deeps, Government Areas and Geduld Props all were lower. Modder Easts and Crown Diamonds were firm at their recent advanced prices. The volume of business was reduced and little inclination to deal was manifested. Alkalis were only wanted in odd lots, and no buying offer was made for larger quantities. In the outside stocks Compound Diamonds had a good run during the week. Commencing with sales at 3s. 6d., they advanced in progressive stages to 7s. 9d., the last price being 7s. The other sales were: Montealeos, 16s. to 17s. 6d.; Phoenix, 1s. 1d. and 1s. 2d.; Makganyene Diamonds, 30s.; Sakalavas, 6s. and 6s. 3d.; New Farms, 1s. 10½d.; Koodoo Diamonds, 19s. 6d.; Union Tins, 5s.; South-Westerns, 17s. 6d. Theron Diamonds were 17s. buyers, and Henderson's Options 10d.

	Fri. 20th.	Sat. 21st.	Mon. 23rd.	Tues. 24th.	Wed. 25th.	Thurs. 26th.
African Farms	14 6*	14 1½	14 0	14 3	14 3	14 3*
Anglo-Amer. Corp.	—	—	—	23 6*	—	23 0*
Apex Mines	7 3*	7 5	7 8*	7 5*	7 5	7 5*
Bantjes Cons.	2 6†	2 6†	2 3*	2 3*	2 5	2 3*
Brakpan Mines	64 0*	64 0*	64 0*	64 0*	64 0*	63 3*
Brick & Potteries	4 0*	4 0*	4 0*	—	4 0*	4 0*
British South Africa	20 0*	21 0	—	21 0*	20 *	20 6*
Bushveld Fins	1 4*	1 5*	1 5*	1 7†	1 0*	1 *
Cinderella Cons.	—	4 3*	4 0*	4 6*	4 6*	4 6*
City Deeps	—	55 6*	—	55 0†	53 0*	55 0*
Clydesdale Colls.	24 9*	24 9*	—	—	—	24 0*
Con. Investments	28 0*	—	27 0*	27 0*	28 0*	29 0*
Con. Langlaagtes	18 0*	18 0*	18 3*	18 3*	—	19 0*
Con. Mines Selection	21 3*	—	21 0*	22 0*	21 6*	21 6*
Coronation Freeholds	2 1*	2 1*	2 0*	2 0	2 1*	2 1*
Coronation Syndicates	—	—	2 6*	—	—	2 6*

	Fri. 20th.	Sat. 21st.	Mon. 23rd.	Tues. 24th.	Wed. 25th.	Thurs. 26th.
Crown Diamonds	25 0	25 6	25 3	25 3	25 9	25 0
Daggatontem Mines	22 0	21 6*	22 0	21 9*	21 9	—
East Rand Coals	2 6*	2 6*	2 6*	2 6*	2 6*	2 6*
East Rand Deeps	1 0†	0 10	1 0*	0 10*	0 10*	1 0†
East Rand Minings	17 0*	—	17 0*	17 0*	—	17 0*
East Rand Props	5 6*	6 0†	5 3*	5 6*	6 0	6 0†
East Rand Debs.	—	£62*	£62½*	£62*	£62½*	—
Eastern Golds	1 0*	1 4†	1 0*	1 3*	1 0	1 1†
Ferreira Deeps	11 0†	—	11 0†	—	—	—
Frank Smith Dmds.	4 9†	4 7*	4 3*	4 7*	—	4 8†
Geduld Props.	45 9	45 6*	45 9a	46 6*	46 6*	45 6
Geldenhuis Deep	—	—	—	7 6*	—	—
Ginsbergs	1 7*	1 7*	1 7*	1 7*	1 9*	—
Glencairns	1 0*	1 0*	1 0*	—	1 0*	1 0*
Glencoe Collieries	—	—	6 0*	6 0*	6 0*	6 0*
Glyn's Lydenburgs	—	—	16 9*	—	—	16 6*
Govt. Areas	92 9*	93 3	93 3*	93 9	93 6*	92 6*
Jhb. Bd. of Ex.	30 0*	—	30 0*	30 0*	30 0*	30 0*
Klerksdorp Props	1 2*	1 2*	1 2*	—	1 2*	1 2*
Knight Centrals	6 1*	6 2*	6 6	6 6	6 6	—
Lace Props.	16 3*	16 3	—	17 0	16 9	16 3*
Leeuwpoot Tins	24 0	23 0	23 0*	23 0*	24 0	24 0
Luipaardsvlei Est.	3 0*	3 0*	—	3 0	—	—
Lydenburg Farms	8 5*	8 5*	8 5*	8 6*	8 6*	8 6*
Middelvlei Estates	—	—	—	—	—	1 1*
Modder B's	163 0*	163 9	165 0	163 6	164 0*	164 0*
Modder Deeps	158 0*	169 9	159 6*	160 0a	160 0*	159 0
Modder Easts	19 9	19 6*	20 3	20 3*	20 6	20 9
Do. Opts. (3 yrs.)	3 2	3 1*	3 4	3 4*	3 3*	3 3*
Do. Opts. (4 yrs.)	4 9*	4 9*	5 3*	5 6*	5 3*	5 4*
Hume Pipes	26 6†	26 3*	27 0	27 0*	27 0*	27 6*
Natal Navig. Colls.	22 0*	22 0*	22 0*	22 6*	22 6*	22 6*
National Banks	305 0†	305 0†	—	305 0†	305 0†	—
New Boksburgs	1 0	—	1 3*	—	—	—
New Eland Diamonds	—	—	—	22 6a	—	21 6*
New Era Cons.	10 0*	10 0*	10 1	10 3	10 0*	10 0*
New Geduld Deeps	4 10*	4 9*	4 9	4 9*	4 9*	4 11†
New Heriots	8 6*	10 0†	8 6	8 6*	—	—
New Modders	£27½	£27½a	£27½*	£27½*	£27½	£27½*
New Unifeds	4 0†	4 0†	4 0†	4 0†	4 0†	4 0†
Nigels	5 0*	—	—	5 0*	5 0*	5 0*
Nourse Mines	11 0†	11 0†	10 3†	11 0†	10 6†	11 0†
Premier Deferreds	150 0	—	—	150 0*	150 0*	150 0*
Premier Preferreds	—	—	—	150 0†	—	150 0†
Pretoria Cements	68 9*	68 6	69 0*	68 6*	69 6	69 6
Princess Estates	2 4*	—	2 3*	2 3*	2 3*	—
Rand Collieries	3 3*	3 3*	3 5*	3 6	3 5*	—
Rand Mines	—	65 0†	65 0†	—	65 0†	65 0†
Rand Nucleus	1 5*	1 5*	1 5*	1 5*	1 5*	1 5*
Rand Select. Corp.	—	76 0*	77 0*	79 0*	79 0	79 0*
Randfontein Deeps	4 9†	—	4 3*	4 3*	4 9*	4 9†
Randfontein Est.	15 6*	15 0*	15 0*	15 0*	15 0*	15 0*
Roberts Victors	12 0*	12 6	12 6*	12 6	13 0†	12 0*
Rooibergs	4 2*	4 3*	4 2*	4 3*	4 4	4 3
Ryan Nigels	3 3*	3 3*	3 3*	—	3 3*	3 3*
Shebas	1 6*	1 6*	—	—	1 6*	—
Simmer Deeps	1 3*	1 3*	—	1 6†	1 0*	1 6†
S.A. Breweries	30 0*	30 0*	30 0*	30 0*	30 0*	—
S.A. Lands	5 9*	5 9*	5 9*	5 10*	5 11	5 8a
Springs Mines	47 3*	47 0	47 3	48 3	48 3	48 6
Sub-Nigels	21 0	21 0*	21 6	21 3	21 3†	21 0*
Swaziland Tins	18 6†	17 0†	11 0	11 0*	12 0	12 3*
Transvaal Lands	—	27 0*	27 6*	—	—	27 6*
Trans. G.M. Est.	—	13 9†	—	12 6*	12 6*	—
Van Ryn Deeps	70 3*	70 *	70 3	70 6a	71 3	70 9*
Village Deeps	—	—	10 6*	—	—	10 6*
West Rand Cons.	—	—	—	—	2 8*	2 8*
Western Rand Est.	2 0*	—	2 3*	—	2 3*	3 6*
Witwatersrands	—	18 6†	18 6†	—	—	—
Wit. Deeps	13 0*	13 9	13 6*	—	13 6*	13 9*
Wit Townships	26 3*	26 6	—	—	27 0*	27 3*
Wolhuters	2 0*	2 1*	—	2 0*	2 1*	2 0*
Zaaiplaats Tins	9 0*	9 3	—	9 10*	9 11	9 10*
New States	24 0*	24 0*	24 6*	24 6	24 6	24 6*
South Van Ryns	9 0*	9 0	8 9*	8 9*	8 9*	8 9*
S.A. Alkali	15 0*	16 0†	12 6*	12 6*	18 0	19 0a
Tweenfontein Colls.	23 0*	22 6*	22 6*	22 6*	—	22 6*
Van Dyks	2 0*	1 0*	1 3*	1 3*	1 3	1 9
West Springs	22 0	22 0	22 3	22 6	22 3	22 0*
Do. Options	5 6	5 6	5 6*	5 6*	5 6	5 9*
National Banks	305 0†	305 0†	—	—	—	—
Union 5 per cent. Tax £100!	£101!	£101½	£101!	£101½	£101½	£101
Union 5 per cent.: 20th. £102 10s.*: 21st. £102 15s.: 23rd. £103*:	24th. £102 15s.*: 25th. £102 17s. 6d.*: 26th. £102 10s.					
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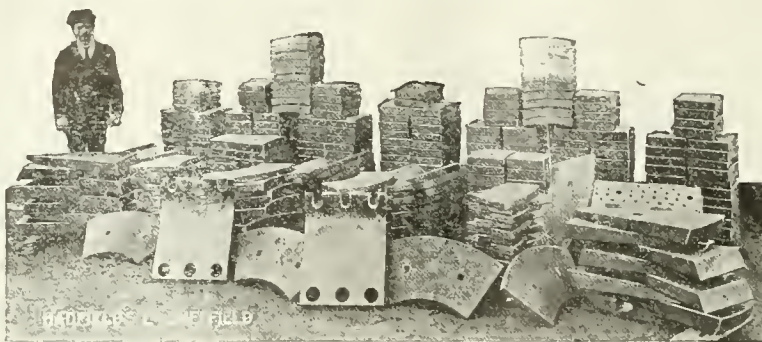
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RHODESIAN & BELGIAN CONGO SECTION.

Chrome Iron Discoveries—Selukwe Chrome Iron—Gatooma Small Workers.

THE recent discoveries of chrome iron ore in Southern Rhodesia are expected to have a most important bearing on the future of that country. This country, says the *Bulawayo Chronicle*, has for some time past been the biggest producer of chrome iron or chromite, as it is more correctly called, the fact being that the less iron the mineral contains the better its quality is. Renewed attention has been called to the deposits known in various districts both in Matabeleland and Mashonaland by the reported deal over the property in Umvukwe Hills. It does not appear altogether certain that the reports regarding that transaction have official confirmation, but there seems to be no doubt as to the magnitude of the deposits themselves. According to a recent visitor to the property, the ore takes the form of narrow reef-like bodies, not as a rule more than two or three feet in width, and lying nearly horizontal. Although their small width will require very careful mining, the working facilities are exceptionally favourable owing to their situation on the slopes of the serpentine hills. They form part of the remarkable body of igneous rock which has come to be known as the "great dyke." Many masses of chromite are known at various points along its course, but all of those opened up in the past have proved low grade, and the Umvukwe occurrence forms the great exception to the general rule, as it is said to run extremely high in chromic oxide. It thus resembles the Baluchistan deposits, which have hitherto held first place as regards grade, though their production is very small compared with that of Selukwe. At the last-named locality the ore is of good grade, 48 or 49 per cent. on the average, and the bodies are so large that they are easy to work without getting any waste into the ore, which is a very important point, because the price decreases rapidly as the chrome contents become lower. It is obvious from the talk about chromite and the number of samples passed from hand to hand, that the reports of the Umvukwe deal have given rise to hopes of other people making fortunes out of chrome. It must be remembered, however, that Selukwe was pretty well able to supply the world's demand before the Umvukwe deposits were discovered, and the opening up of the latter must inevitably still further restrict the market for competing ores. Chromite is a very low-priced mineral (about 65s. per ton was an average quotation before the war) and deposits away from the railways may at once be ruled out of consideration as being possible to work at a profit, except in the improbable event of their being of vast size and extraordinarily high grade combined. It is not at all likely that Selukwe will have other serious rivals, apart from the Umvukwe field, and people would do well to think twice before embarking their capital or energy on opening up chromite bodies in other parts of the country, however promising they may appear.

* * * *

The third bulletin issued by the Geological Survey of Southern Rhodesia deals with the Selukwe mineral belt, and in regard to the chrome iron industry in that district it states: The total production of ore from the beginning of operations in 1907 to the end of 1918 was 581,557 tons valued at £1,718,241. This total may include a few tons obtained by exploitation of the chromite deposits in the Great Dyke outside the district described here, but otherwise it is the output of the chromite bodies worked in the tale-schist and serpentine of Selukwe. The Selukwe chrome iron ore deposits are therefore of great economic importance. A large quantity of ore remains to be worked by present

means; and a vast quantity below the commercial grade (the basis being 50 per cent. chromic oxide, Cr_2O_3 , but ore of lower grade is marketable) may pay to concentrate in the future. From the nature of the occurrence it is clear that many bodies may be concealed below the surface.

* * * *

The last meeting of the Small Workers' Association at Gatooma was well attended. The question of holding a mining conference was discussed, the feeling of the meeting being that there were subjects of sufficient urgency to warrant it. At the same time it was realised that the Association did not bear any of the expense of such conferences and would therefore leave the decision to the Rhodesia Chamber of Mines. If no conference were held, they would deal with the subject as far as they could as an association. Mr. J. Mack was elected to serve on the committee to handle the new scheme for assisting prospectors. An invitation from the Civil Commissioner to appoint a representative on the new Roads Board was discussed, and a deputation was arranged to see Mr. A. L. Baker first, as it was felt that the Association's representatives could not go back from the position they took up on the old board which led to their resignation. The members present agreed that all would do their best to assist the curators of the new geological museum which is now making active preparations.

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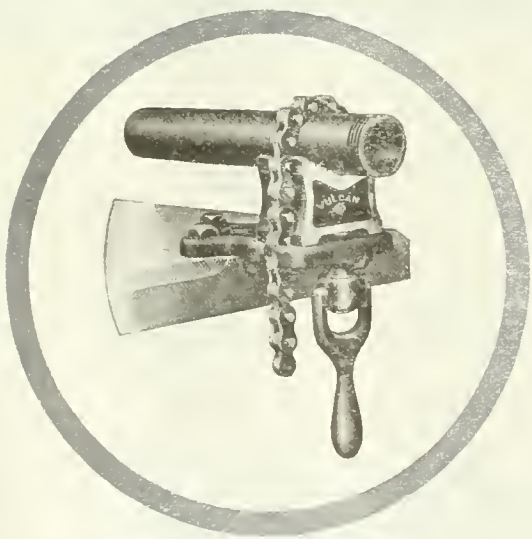
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ENGINEERING SECTION.

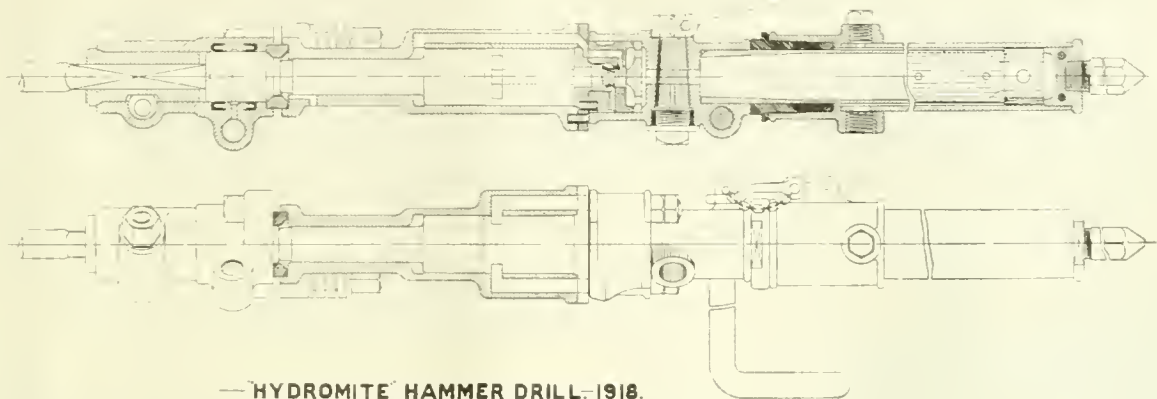
HAMMER DRILLS—THEIR HISTORY, DESIGN AND OPERATION.—IV.

[By HENRY S. POTTER.]*

Slide 33 illustrates a purely automatic Hammer Drill, i.e., it is fitted with *Automatic Feed* and *Automatic Rotation*. When an air-feed is used in connection with automatic rotation it is necessary to provide for some device for varying the pressure in the air-feed (to compensate for various weights of steel, angles of drilling, etc.), which in this case consists of a small thumb valve shown at the mid-length of the machine, which operates a small reducing valve arranged in the back head of the machine. On many tests with this machine I found that it worked perfectly satisfactory when in the hands of a white man, but a Kaffir could rarely be taught to operate the reducing valve correctly. A considerable amount of stoping was done with a modification of these machines by Mr. Chalkley on the Knights Deep in the years 1911 to 1913, and very high drilling speeds were obtained, the whole machine being mounted on a rectangular bar and with a nose support supporting the rig in the collar of the hole.

removing steel from hole. The final position on the rearward motion opens the air-feed to exhaust. It will also be noticed with this design a very long shank is provided to the steel and comparatively short length of overhang from the column bar arm to the nose of the machine. The machine is designed to either operate with lug steel or what would probably be better to use a 1 in. square shank with a collar to same to position steel in chuck.

Slide 35 illustrates a design of a cradle type of machine. The main feature aimed at has been simplicity of design, and low cost of upkeep. It will be noticed that the water and air control are similar to those shown on Slide 34, the particular features I should like to call attention to are the ratchet wheel, ratchet case and the chuck. The ratchet wheel is provided with a double head, so that in the event of one set of teeth being worn out by the action of the pawls the wheel can be reversed giving a double life to this part.



—HYDROMITE HAMMER DRILL—1918.

FIG. I.—AIR-FEED—HAND ROTATION.

Characteristics: All-steel construction; three-part construction front head with water attachment on to anvil block; differential piston; differential valve moved by compression; reverse type of air-feed.

Slide 34 illustrates some of the writer's ideas in Hammer Drill construction, and I wish to point out the features embodied in these designs:—*Nose Rotation*: This allows the air and water hoses to be always stationary, thus saving kinking and therefore lengthening the life of same. The detail at the bottom of the slide shows the air and water control in section. The novel feature consists of arranging for the simultaneous operation of both the air and water cocks. The result is obtained by arranging under the air cock handle a cam face which operates the water cock when the air cock handle is operated, the cycle of operations being as follows:—On moving the air cock lever to No. 1 position, air passes to air-feed. No. 2 allows an air blast to be sent through the water tube and steel, thus cleansing the hole. No. 3 position: Water cock opens also, air passes to the main valve of the machine. Note: A similar cycle is used in the Sullivan Hammer Drill, but in this design the air and water control is by means of *one* plug cock; after a time this may leak and cause trouble. A similar control was provided in the Climax Imperial 1909. When shutting off the reverse of the above operations takes place. It is very advantageous in hammer drills using hollow steel to send an air-blast through the steel to blow out the sludge before

Slide 36.—The ratchet case lies in a cylindrical extension of the cylinder and is provided with six pawl positions, of which two only are in use at any one time, so that when one pair of knuckles wear change may be made to two new positions. The chuck design is for lug steel and consists of only three parts, namely, chuck body, with rotational flutes solid with same, renewable chuck bushing which is assembled from the front end and front plate, the latter part carrying the cam lugs which engage the lugs on the steel. It will be noticed that these lugs engage in longitudinal slots in the chuck body, thus the front plate with its cam lugs being very simple in shape can be very readily replaced when worn at very small cost. The rotation and valve of this machine are similar to the Flottman. A modified valve has been designed to work in connection with this machine consisting of two hollow cup-shaped pressings, welded circumferentially. This gives a very light valve which is very quick in action. It will be noticed that very large oil chamber space is provided with provision to lubricate the valve and ratchet gear and also an oil or grease chamber is provided surrounding the chuck body to lubricate the shank of the steel, and also that the exhaust ports are so placed that dirt cannot enter the cylinder.

*Paper read before the South African Institution of Engineers.

(To be continued.)

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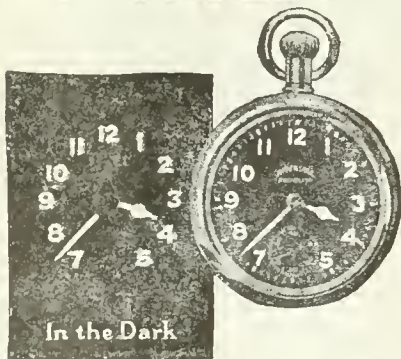
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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

The Question of Peace and the Poorer Grade Mines—Timber and Building Materials—Second-hand Timber and Iron—Electrical Goods—Iron, Steel and Machinery—Explosives—Excellent Trade Tonic—National Bank.

THE questions of Peace and the poorer-grade mines are the subjects uppermost in the minds of the mercantile community. Therefore we give the result of interviews with several of our merchants, builders and contractors. One man remarked that he was not troubling overmuch in reference to Peace, as that would now be taken in a matter of course fashion as far as Johannesburg was concerned. But what he was worrying about was the statement made by the President of the Chamber of Mines at the quarterly meeting on Monday last. He considered that this was one of the worst reports ever made in Johannesburg by such a responsible body. He thought it was a crying shame that the mines were taxed in the way they were when the farmers had now become the capitalists, without taxation, by the unearned increment to their land on the strength of what the mining industry had done. He considered that so far as the mining business went to-day it was hopelessly inadequate for the merchants especially catering for that class of trade. Another merchant said that immediately Peace was signed it would create commercial activity throughout the world, which must of necessity do South Africa good—perhaps even more good than one could easily imagine, for our home food products and the raw materials possessed by us for export should create much sound business. What is chiefly troubling importers is as to how prices will be affected. As regards timber, prices in the Baltic have risen in May £1 and a further £2 per standard in June in anticipation of the enormous demand after Peace is signed. Notwithstanding this increase, the firm supplying the information said that they were cabling for timber rather above their average quantities. It appears, however, in this respect, that they have distributed their orders between London and Sweden. The general opinion was that the Central European Powers must have heavy stocks in some lines, as over 120,000,000 of people would not have been idle in manufacturing commercial goods in addition to their war supplies. It is known that in one port of Germany alone over £1,000,000 worth of enamel ware is awaiting export. Naturally during the last two years of the war the manufacture of ordinary export goods was retarded very much owing to the war conditions. Another merchant does not think there will be very much reduction in mining materials, but already American and Canadian mild steel bars have gone down to 33s. per 100 lbs. from merchant to consumer in Johannesburg. The coast ports are also overloaded with blankets and other winter goods that cannot be freely placed on the market. The fact is that Japan, America and Canada are beginning to really cut into our trade in an overwhelming manner, and this obviously will increase as business becomes more expansive. What is more is that the countries with ready cash will get the best terms, therefore reasonable decreases can be expected in the Cape, including the Transvaal with its immense gold, diamond and base metal propositions. The conclusion of the matter is that we need not trouble overmuch with reference to Peace, but rather assist in every way to inform public opinion so that the Government will come in and do the right thing at this critical stage to help a very lame dog over the style—in the poorer-grade mines.

TIMBER AND BUILDING MATERIALS.

There is not a great deal to be said about timber, as prices are much about the same as last week, with, however, a better tendency. Deals are 1s. 6d. to 1s. 6½d; floorings, 8½d.; and ceilings, 5½d. to 6d. per ft. Business is only middling. Through waiting for Peace and more normal times, people are very shy in reference to calling for tenders for new jobs, as bricklayers are particularly scarce and other building artisans are not too plentiful, as so many went to the coast during the strike period, all of whom have not yet returned. It is thought that the building trade may expect good times in the course of a month or two, now that things are becoming more normal in the labour department, and several new contractors have put in an appearance since their return from the war. The severe competition among the builders is likely to bring prices down, but only from 5 per cent. to 10 per cent. on prices ruling at the time of the Armistice, not sufficient, however, to make any difference towards building activity, which will only come about through individuals becoming alive to the fact that Johannesburg must have more houses to accommodate the people who are rushing over one another to secure up-to-date residences. The price of galvanised iron is 1s. 3d. to 1s. 1d. per ft., according to the lengths, for 24 gauge, and 1s. 1d. for 26 gauge. The demand for bricks continues good, but nothing extra considering the circumstances, and there has been no alteration in the prices.

Second-hand Timber and Iron.—In this market prices remain the same as last week, but materials are very scarce indeed and there is practically no second-hand iron in town at all. Limited fresh stocks are expected within a few days. In the meantime the demand is good.

ELECTRICAL GOODS.

There is very little of importance to report this week in connection with the electrical material market. Tubing is even scarcer now than last week and commands practically

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any price. Dealers are anxiously awaiting stocks which arrived at the coast some twelve to fourteen days ago from oversea. In the meantime, in the absence of tubing, a casing made locally of wood is being used as a substitute, which experts state should last ten or fifteen years, although of course its use is expensive in comparison with regular tubing. Country orders are still plentiful, and business is only curtailed by the dearth of tubing. A very interesting discussion took place at a Town Council meeting on Tuesday, June 24th, in reference to purchasing electric lamps to the extent of £2,291 11s. 9d. Mr. Cohen, in moving that the requisition be referred back, pointed out that the prices quoted were the same in every case, and he further added that he was aware that a ring existed, but he claimed that it would be broken within the next week, so that by deferring the matter it would be possible to secure the lamps at a cheaper cost—for example, lamps quoted at 20s. 6d. a dozen here could be obtained at the coast for from 10s. to 15s. a dozen. The Chairman of the Tramway Committee said the purchase was recommended on the advice of the technical experts, who claimed that in view of the fact that the merchants had sufficient stores to meet Union demands for two and a half years prices were as low now as they would be for some time. Eventually it was decided to adopt the recommendation to purchase at the price before-mentioned.

IRON, STEEL AND MACHINERY.

Business slackened off at the latter end of this month, as most firms and mines are stocktaking for their financial and income tax year to June 30th, 1919. There have been plenty of inquiries for bar iron and steel. The feature of the week has been the pronounced drop in American mild bar steel, which is said to have been done at 32s. per 100 lbs. in Johannesburg, which quotation has been queried, but as one firm is known to be selling at 33s., the quotation of 32s. cannot reasonably be questioned. This may be the means of our local manufacturers again reducing their price to cut below the imported article, and people who are dealing largely in bar iron and steel are surprised that the oversea competition with our own factories should have come so quickly. The explanation is that many of the belated orders placed in Canada and America before the Armistice are now arriving in an overburdened market. Again, the largest sized angles from America, 3½ to 4 in., are being sold in Johannesburg at 42s. per 100 lbs., which before the Armistice were 60s. These large sizes are not made in our factories, which are turning out the smaller sizes at 35s. Steel plates are being sold at £45 per ton delivered from the Johannesburg stores, but "to arrive" quotations are said to go as low as £32 10s. per ton, which also is explained by the old orders being now executed. All the "to arrive" plates are coming forward to the legitimate merchants as apart from speculators, who are pretty well all finished with steel goods. The ordinary quotations of merchants to retailers are as follows: Wire nails, 1 in., 50s.; 2 in., 47s. 6d.; 3 in., 45s.; 1 in., 42s. 6d.; 5 in., 40s.; 6 in., 37s. 6d. Imported steel rods, 45s. per 100 lbs.; mild imported steel, 42s. 6d. per 100 lbs. There is a drop in drill steel of about 3d. less than that current for hollow steel. It is said that merchants have sufficient stocks of steel in Johannesburg to supply the place for two years. One mine, it is said, has sufficient for five years, but in this latter case it may be in consequence of the change over from the hammer boys to the Jackhammer and other machine drills.

EXPLOSIVES.

We are informed that the British South African factory, taking advantage of a favourable opportunity, has lately succeeded in cancelling a few high freights. Advices from Home in connection with dynamite are very scanty; everything seems to be hanging fire awaiting settlement of Peace. The factory's importations, of course, in view of their large stocks, are very small, but it is expected that probably within another three or four months a difference in favour

of the consumer will begin to manifest itself. In connection with the subject of dynamite, Mr. Frank F. Southwell, C.E., has shown us a sample of Kieselguhr of very good quality. He informs us that on the property in the N.W. Transvaal he has discovered a large deposit thereof. As this is one of the component parts of dynamite, and is also used extensively for insulating purposes and polishing, when our local industries are in full swing there should be a large demand for this commodity. Mr. Southwell has also shown us some good specimens of felspar, magnesite and galena from that district. We hope to have some further information regarding these minerals in a later issue.

EXCELLENT TRADE TONIC—NATIONAL BANK.

The Chairman of the National Bank, in referring to trade, reported that the Union exported for 1918 £32,949,237 in general commodities and £35,758,316 in gold, totalling £68,707,553, as compared with imports of £49,487,168, showing us to be a creditor country for £19,220,385. He preaches efficiency and co-operation. The former is good, but the latter is not the panacea that many believe in such a cosmopolitan trading community as ours, more especially in the distribution of foodstuffs, where the non-European has a shop at almost every corner of the street in the poorer neighbourhoods. The few words in reference to employer and employee co-operating together is another matter. On neither side, the Chairman remarked, must there be intolerance. The speech merits the careful study of every business man.

REVIEWS.

"Testing for the Flotation Process," by A. W. Fahrenwald, Met.E., E.M., Professor of Mining and Metallurgical Engineering, New Mexico, and late of Mines, New York, John Wiley & Sons, Inc. London: Chapman & Hall.

This work was undertaken with the object in view of furnishing, as far as possible, the required information, to give students and any one else testing for the flotation process, a sufficient insight to conduct experiments in an intelligent manner. The theory of flotation has been taken up in a general way, no effort being made to advance any special theory. Those which have been most strongly emphasized have been discussed quite fully and the reader is left to decide for himself whether flotation can be satisfactorily explained by any one of them. The knowledge of the effect of oil, acid, and other reagents is absolutely essential to the experimenter, and these have been taken up with the object in view of throwing light on the reason for their use. The volume is divided into eight chapters—Concentration by flotation; Classification of the flotation process; Theory of flotation; The flotation of oxidised ores; Oil and other reagents in flotation; Tests; Cost of flotation; Formulae and tables.

"Mining Engineers' Handbook," written by a staff of specialists under the editorship of Robert Peele, Professor of Mining Engineering in the School of Mines, Columbia University. New York: John Wiley & Sons, Inc. London: Chapman & Hall, Ltd. 1918.

This is a most comprehensive text book which embraces every aspect of the activities of the mining engineer. There are 44 separate sections, embracing geology, sinking, tunnelling, boring, explosives, prospecting, development, underground transport, draining, ventilation, machinery (both electric and mechanical, mining economics and organisation, mining laws, ore dressing, sampling, surveying, chemistry, dynamics, etc., and in fact every branch of science and activity which comes within the scope of mining engineering. It is at once the most comprehensive and compact mining engineer's library that we have ever seen, and should find a place on every mining man's bookshelf.

African Saltpetre Co.

The London Secretary of the African Saltpetre Co., Ltd., states in a circular that in the neighbourhood of the company's properties in Griqualand West, the discovery is reported that the deposits of nitrate of potash—which this company was twenty-five years ago advised to look for in the loose earth lying at the foot of the hills—are actually found in the shales forming the hills themselves. These shales are very extensive and form a prominent feature in the properties examined. A company, with a capital of £160,000, has been formed in South Africa to work a large number of farms in the same district, and so far as can be judged on the same line as the seven farms (about 50,000 acres) owned by the African Saltpetre Co. The directors are taking counsel as to the best method of dealing with the company's own properties. In view of the information they have received, they have discontinued the negotiations (reported at the last meeting) on an application to work the saltpetre deposits on the company's farms.

The Work of the Miner on the Western Front.

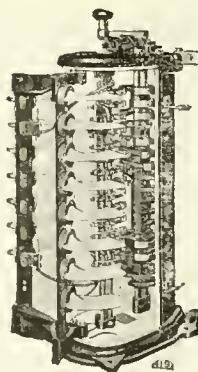
At a recent meeting of the Institution of Mining and Metallurgy, Major H. Standish Ball, M.Sc. (late Assistant Inspector of Mines, General Headquarters, France), gave an interesting account of the work of the miner on active service, showing the wide range of duties he performed. The duties of the Tunnelling Companies, in which the work of many thousands of miners is embodied, brought them into touch with such subjects as geology, crater formulae, explosives, mining tactics, mine listening instruments, mine rescue work, and mining operations. The first party of miners to form the nucleus of the 170th Tunnelling Company, R.E., was despatched to France on February 20th, 1915. Active recruiting was carried out both in the field and from the mining districts, sufficient miners being obtained to form five companies during the following month. Further companies followed rapidly, and by the end of June, 1916, there were actually twenty-five Imperial companies and seven Overseas companies actively engaged in mining operations—a force of approximately 25,000 men being employed on this work. The companies in each army were administered by a controller of mines at Army Headquarters, and they in turn by an inspector of mines at General Headquarters, assisted by a staff of technical experts. The geological staff rapidly became a most important part of the mining organisation, and their duties varied from advising on the best depths and types of ground for all mining work to investigating the source of material discovered in captured German pill boxes. By means of the application of results obtained from the explosion of large mines to formulae already existing for explosions, empirical formulae were obtained by means of which it was possible to calculate fairly accurately the size and depth of the resulting crater and the area of ground that would be completely and partly shattered underground. At the commencement of the war, wet gun cotton was the only explosive used in the Army for demolition purposes, and it was consequently used largely in the early days of mining in small charges. Owing, however, to its inferior cratering properties as compared with the safety explosives of the ammonium nitrate group and the large amount of carbon monoxide generated after an explosion, its use was superseded first by blasting, and finally by ammonal. The latter explosive was used practically universally in all mining operations, gun cotton being used for demolitions and emergency charges only. Towards the latter

part of the war, owing to the scarcity of aluminium, the supply of ammonal became greatly restricted, and experiments were made with amatol and sabulite with a view to their use. The former explosive proved to possess only about 65 per cent. of the lifting power of ammonal, and the latter about 85 per cent. Forunately, the necessity for their adoption never arose. Ammonal proved to be an extremely safe explosive for use in trench warfare. Its chief defect was its excessive hygroscopicity, an ordinary detonator failing to fire it when it contained over 4 per cent. of moisture. It was extremely sensitive to waves of detonation; it was found that if two 3lb. charges in tins were suspended in the air at a distance of 9 ft. apart, the second one would be fired by the detonation of the first. All charges were fired electrically if possible, care being taken to spread the detonators equidistantly through the charge to ensure complete detonation in this connection. The use of "cordeau detonnant" proved of benefit, the fuse being led through the charge and detonating any explosive with which it came into contact. The usual mining explosives used by the Germans were gluckauf, westfalite, and donarit. The composition of these explosives approximate fairly closely to amatol.

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The Week's Meetings.

ROSE DEEP.

Mr. F. Raleigh, chairman, presided at the annual meeting of shareholders in the Rose Deep, Ltd., on June 19, and in moving the adoption of the report of the directors and balance sheet said:—The operations for the past year resulted in a working profit of £139,813, which is increased to £140,375, when including interest and sundry revenue less donations, etc., and miners' phthisis assessments. The company commenced the past year with a credit to appropriation account of £130,689. After paying two dividends totalling 17½ per cent., and providing for Government and Provincial taxation, there remains a credit balance of £137,225 with which to commence the current year. This sum is invested as follows:—Stores and materials, £74,600; shares in co-operative concerns and sundry debtors, £12,621; net cash and investments, after allowing for all liabilities, £50,004.

The results of the operations during last year show a large profit decrease, owing to there being a reduction of 69,000 tons in the tonnage treated, an increase in the working costs of 1s. 7d. per ton, and a decrease in the recovery value of 1s. 5d. per ton. The additional working costs have been brought about chiefly by extra costs under the head of labour and stores due to the war. The shortage of native labour occasioned by the influenza epidemic and the serious disorganisation occurring therefrom very seriously affected the working of the mine during September and following months. As you will realise, the disabilities under which the company has worked during the past year, in common with other companies on the Rand, have been very great. In the case of this company there has been a reduction in the working profit earned below that of the previous year of no less than £119,099, and a reduction in the dividend declaration of 12½ per cent. A further decrease has taken place in the development footage of 2,078 feet as compared with the development accomplished during the previous year. The footage for the year exposed a payable tonnage of 266,480 tons, of a value of 5.3 dwts. The ore reserves show a decrease of 310,000 tons and now stand at 2,909,520 tons valued at 5.3 dwts., which is .1 lower than the value of the previous year. Again a large tonnage of sand was lowered into the mine to support the underground workings; this tonnage included the whole of the current sands from the Rose Section reduction works.

The Current Year.

The operations for the current year, viz., for the five months ended 31st May last, have produced an average working profit of £10,800 per month. This is £820 per month below the average of the previous year. The value of the yield has been about 4d. per ton higher than that of the year under review, against which there has been an increase in working costs of 7d. per ton. The consulting engineer considers that for the remainder of this year the yield per ton will be at least equal to that of last year. A dividend of 7½ per cent. was declared on the 17th inst. for the current half-year, which is at the same rate as the previous one. The mine is in a position to put out a much larger tonnage

than that now being obtained, provided a better native labour supply is available. The native labour position shows an improvement since the close of the year, which is reflected in the larger output and better profits of the past few months. The development operations of the current year have disclosed values about in keeping with those obtained during 1918. The number of employees who enlisted during the whole period of the war was 142, and there are still 21 who have not yet returned. I much regret to have to record the death on active service since our last meeting of Lieutenant E. S. Collier, Lance-Corporal T. Wishart, Cadet D. Simpson and Private E. R. Howes, and to their relatives we tender our great sympathy. Our manager, Mr. A. J. Walton, who has been in charge of the mine for over eight years, left us in March last to take up the appointment of general manager to the Crown Mines, Ltd. I would like to express the Board's appreciation of the splendid services rendered by Mr. Walton; his record at the mine for economical working costs will be hard to beat. We have been fortunate in securing the services of Mr. Arnold Milne as successor to Mr. Walton. Mr. Milne is a tried and experienced manager on the Witwatersrand, and your Board has every confidence in his management. I beg to express the Board's appreciation of the services rendered by the Consulting Engineer, Mr. E. H. Clifford, and to the staff at the mine and head office.

Mr. Sprinz seconded the motion.

Mr. Adler asked if the increased expenditure on wages applied to the staff, or only to those who came under the protection of the Labour Union?

The Chairman said that war bonuses were limited to men drawing £35 per month; other employees and members of the staff had borne the extra cost of living themselves, and that was the position throughout the industry. He understood that arrangement was generally applicable.

Mr. Adler said the record of the Rose Deep was one of the finest on the Rand, and he paid a tribute to the manager. There were one or two points he would like to discuss with the directors, and the only point he wished to raise was in connection with the directors, the number of which seemed to be large.

The Chairman said under the Articles of Association the directors had to be not less than three or more than nine. The board at present numbered eight. The Rose Deep and Glen Deep amalgamated in 1910, and that probably accounted for there being eight directors.

The motion was carried unanimously.

Messrs. Meintjes and Raleigh were re-elected directors, and the auditors were re-appointed.

DURBAN-ROODEPOORT DEEP.

The 22nd annual meeting of shareholders in the Durban Roodepoort Deep, Ltd., was held on June 19, when the report of the directors and the balance sheet were adopted, without discussion. Mr. Frank Raleigh, the chairman of the company, in his address, said that the working profit for last year amount-

ed to £30,067, which was £18,789 less than the profit of the previous year. Whilst there was an improvement in the value of the yield, it was entirely offset by an increase in the working costs; further, the tonnage treated was 13,400 tons less. The increase in the working costs was due to the general increase which had taken place, owing to the war, under the heads of labour and stores. From the profit earned had to be deducted the cost of phthisis compensation and donations, less interest, etc., received, reducing the sum credited to appropriation account to £29,280. After providing for a distribution of £11,000 for Dividend No. 16, Government taxes, and capital expenditure, there remained a balance of £92,297 to the credit of appropriation account, which was an increase of £12,409 above the balance with which they commenced last year. The credit to appropriation account was invested as follows:—Stores, shares and debtors, £55,301; net cash, after allowing for all liabilities, £36,996. The development footage accomplished showed a shortfall of 2,080 feet, against which a reserve of £6,420 had been created out of working costs. That footage developed 192,500 tons, of an average value of 6.6 dwts., and was insufficient to maintain the ore reserve position, which showed a decrease of 95,700 tons. The ore reserves stood at 1,078,500 tons, of a value of 6.5 dwts. The increasing costs due to the war were severely felt throughout last year. In the early months abnormal rains caused severe flooding of the underground workings, and a shortage of native labour in the latter half of the year, brought about by the influenza epidemic, accentuated the difficulties of the year; consequently the working profit fell from approximately £4,000 per month for the three years ending 1917 to approximately £2,500 per month for the twelve months ending December 31 last. The new scheme for the development of the deeper levels of the mine by means of a vertical shaft was commenced last year. At the end of last month the shaft had attained a depth of 460 feet. As previously advised, the estimated expenditure thereon is £182,500. It is hoped that the shaft will reach the required depth of about 3,000 feet by the middle of 1921, viz., two years from now.

Capital Expenditure.

The position in regard to the capital expenditure programme is now roughly as follows:—Underground development scheme, £182,500; third pump for 12th level, £2,250; dump spraying plant, £1,000; purchase of 17.1 claims from Government, £1,750; total, £187,500. Less expended to May 31, 1919, £43,000; balance to expend, £144,500. Against the estimated balance the company had at the end of last month cash, or its equivalent on hand amounting to £19,000. It was to be expected that the stores on hand would be decreased by about £25,000 before the new shaft was completed, rendering that sum available for capital purposes. That would leave a further £100,500 to be provided out of future profits on the basis of the present capital estimates. Arrangements had been made, of which they had been fully advised, for financing the new development scheme, and as current profits must contribute to the capital requirements no dividend was declared for the second half of last year owing to the low profits earned.

This Year's Operations.

He regretted that the improved results for this year forecasted in the directors' report had not been obtained. Whilst the native labour force was better for a time, it was now falling off again, and there had been a further increase in working costs and slight decrease in the yield. The result was that for five months ending May a working profit of only £3,285 was earned. It was apparent that there could be no dividend declaration for the current half-year. Since the close of the financial year the 14th level on the south reef has advanced from four points, and six winzes were being sunk to the 15th level. All these points disclosed payable reef of the usual average value. It was hoped by the end of the current year to have the 14th level on this reef completely developed, and the development of the 15th level well in hand. On the main reef the 14th level was being driven from the west incline and was exposing payable ore east of this shaft, while the exposures on the west side were unpayable.

They would be sorry to note that three of their employees lost their lives whilst on active service during the past year; they offered their respectful sympathy to the relatives of Gunner H. Wighton and Privates C. O. Reed and J. N. Harris. No less than 115 of their white employees were at tested since the commencement of hostilities, which was a high percentage from their average strength of about 300. Their thanks are due to the consulting engineer, Mr. H. Stuart Martin, the manager, Mr. C. Glyn, and the staff at the mine and head office, for their work during a very trying year.

The retiring directors were re-elected and the auditors reappointed.

MODDER B.

In moving the adoption of the report of the directors and the balance sheet at the annual meeting of the shareholders in the Modderfontein B Gold Mines the Chairman of the company, Sir Evelyn Wallers, said: A summary of the financial results of the past year's work is as follows: We made a working profit of £658,587, to which has been added a sum of £27,010, being the difference between certain sundry receipts and expenditure, as set out in the accounts, making a total profit of £685,597. Adding to this amount the sum of £246,570, unappropriated at the beginning of the year and £72 in respect of forfeited dividends, we had a sum of £932,239 available on appropriation account, out of which we paid two dividends totalling 82½ per cent., which absorbed £577,500; we paid Government and Provincial taxes amounting to £117,130; and on capital account we expended £51,852, against which, however, is set the amount received under the Bewaarplassen Monies Act, namely, £12,888, leaving the net expenditure on capital account at £38,964. The appropriation account was then depleted by a total amount of £733,594, leaving an unappropriated balance at 31st December, 1918, of £198,645, represented by cash and cash assets, less liabilities, as detailed in the directors' report. The extensions to the reduction plant, which were completed and came into operation about the middle of the financial year, enabled the tonnage milled to be increased by 88,000 tons over the crushing of the previous year. The increased tonnage had its effect upon the working costs, which

in spite of the unfavourable conditions prevailing throughout the year only showed an increase of 3d. per ton milled. The average yield, 41s. 5d., however, was 4s. 9d. per ton milled lower than that of 1917, this reduction, as the consulting engineer explains, being due to the fact that a considerable portion of the tonnage requirements had to be drawn from poorer sections of the mine while the preparations to deal with the deeper and richer areas in the south-western section were being made. That, you will realise, was merely a temporary phase, which has since been rectified by the completion of the necessary work, as is borne out by the average yield for the first five months of the current year which has risen to 45s. 2d. per ton milled. The net effect of the drop in grade last year is seen in the reduction of the profit per ton milled, which was 21s. 9d. as against 26s. 9d. in the previous year, but, as I have said, the resumption of mining in the richer south-western section since the beginning of this year has considerably improved the yield, with the result that the average profit for the first five months of this year has risen to £62,291 or 23s. 2d. per ton; and consequently I think we may confidently look forward to an appreciable improvement in the working profits for 1919.

Payable Tonnage Maintained.

The payable tonnage developed during the year is estimated at 596,400 tons of 9.3 dwts per ton value, the quantity being slightly below the tonnage crushed during the period. The re-calculation of the ore reserves at the end of the year showed these to consist of 3,378,000 tons, of a value of 9.2 dwts. over a stoping width of 62 inches. These figures show a reduction of about 150,000 tons in quantity, the value remains unchanged, while the stoping width is one inch greater. Our position, therefore, in this respect is practically maintained and remains satisfactory. It is noteworthy that 1,529,000 tons, or 45 per cent. of this reserve, averaged in value 12.7 dwts per ton.

Last year the shortage of native labour somewhat hampered development operations, but for the current year, during which it is hoped the supply of labour will remain more constant, development operations will be pushed to the fullest extent. A few remarks about the general development position and its prospects for the immediate future will be of interest. Dealing first with the north-eastern section, development during 1918 somewhat lagged behind, but it has now been resumed on an increased scale. The results of the work done so far have not yet been convincing, or indeed very encouraging as we have not yet opened up another large high grade block of ore such as exists around the first level of No. 9 Shaft. In this district the intact area, however, is so large in proportion to the development done in this section that it is quite impossible as yet to express an opinion as to its ultimate chances. Through the good offices of the Geduld Proprietary Mines, arrangements have been made to drive a heading from the nearest Geduld workings into the extreme south-eastern corner of your property. The results so far obtained are extremely encouraging, and at the end of May this heading had penetrated our property for a distance of 610 feet, disclosing a reef body of an average width and value of 47 inches and 18.5 dwts, or 870 inch dwts., equivalent to a grade of 14.5

dwts. over 60 inches. This can be regarded as a particularly favourable showing in a quite unknown section of the mine.

In the central section progress has been slow, but will be accelerated as soon as the installation of adequate pumping plant, which is now in hand, has been completed. You will, no doubt, be interested in the results from 7-5 winze, to which special attention was directed in the consulting engineer's report. The results since the commencement of 1919 have been 318 inch dwts. for 305 feet, sampled, the values prior to this period having been unpayable. It is proposed to deepen this winze as rapidly as possible, so that it will be in a position to connect up with the new Deep Level Shaft, to which I shall refer later, as soon as it reaches the reef horizon. The Fifth Level, which last year I spoke of as just started, was driven a considerable distance during the year, and a block of high grade ore has been added to the reserve here.

Western Section.

In the western section some new ground was developed, but most of the work was confined to detail development, with the object of rendering the very large blocks more convenient for stoping. Several subsidiary levels were started off the incline haulage, and their continuation during the current year emphasises the high-grade character of the ore in this section of the mine. Generally speaking, we made but little progress in the direction of opening up new areas during the year under review, and perhaps a word of explanation is necessary. As I have said, we suffered considerably from shortage of native labour, which you will realise must inevitably have its effect. We might, of course, have diverted a larger portion of the available force to development work, in which case our tonnage output from the mine would have been lower with a corresponding reduction in profits earned. But bearing in mind our very sound development position, we did not feel justified in adopting the course of sacrificing current profits for the sake of still further strengthening ore reserves, and, therefore, we decided deliberately to cut down new development work for the time being. Subsidiary development enabled us to practically maintain the ore reserve position, while profits were kept up to a satisfactory level—a desirable result. We are alive to the importance, on the one hand, of opening up our large unexplored areas well in advance but at the same time we must not lose sight, on the other hand, of the claim of the present shareholder to an adequate return on his investment to which the position of the mine entitles him. These two considerations are ever present in the minds of the Board; when labour is abundant we can of course benefit to the full in both directions, but in times of scarcity we must endeavour to hold the balance as fairly as possible as between profits and advance development. To illustrate the influence of labour supply, it is only necessary to recall that last year, when the force was low, our profits averaged £54,830 per month and the total development footage amounted to 9,894 feet; for the first five months of this year the supply has been good and our profits have averaged £62,290 per month, while a total development footage of 8,229 feet has already been accomplished.

New Circular Shaft.

The upper levels, which have been the mainstay of the mine up to the present will in course of time be worked out, and that the workings are gradually becoming deeper and more remote from the central shaft, which is relatively shallow. It is, therefore, necessary to provide for the development and exploitation of the deeper sections of the mine and this is being done by sinking a new 20 feet circular shaft at the point shown on the plan. The ultimate depth of the shaft will be 1,800 feet, and it is expected to pass through the reef at a depth of approximately 1,500 feet. The collar of the shaft has been completed and machinery for sinking is being assembled, and in the course of a month or so sinking will commence in earnest. Provided reasonable conditions are met with, the shaft will reach its requisite depth towards the end of next year. The ultimate equipment of this shaft is naturally dependent on the results obtained from future development, but it will probably be the main outlet from the mine for many years. The expenditure for a shaft of this relatively small depth will not be excessive and will be spread over a considerable period; it is not likely, therefore, to have any material effect on dividend distributions, particularly as the mine is now in a position to earn greater profits than heretofore. A sum of £27,000 has been voted for sinking equipment and unless heavy water troubles are encountered it is estimated the cost of sinking will not exceed £25 per foot. After reaching the necessary depth the sinking arrangements will be converted to deal with an extensive development programme for at least a couple of years. Should the results be favourable—as we hope will be the case—further expenditure to provide permanent equipment sufficient to deal with practically the total tonnage output from the mine in the future will have to be considered. This is, however, a matter for the future, and the mine is in such a sound position that we need apprehend no difficulty in providing the requisite funds in due time.

The manager's report mentions the names of four further employees of the company who have lost their lives on active service. To their relatives we extend our deep sympathy. Finally, I wish to record the board's appreciation of the services rendered by the consulting engineer, Mr. H. Stuart Martin, and the various head office officials, as well as by Mr. C. L. Butlin, the manager, and those who worked with him at the mine.

Mr. Mackie Niven seconded the adoption of the directors' report and accounts, and the motion was carried unanimously.

Sir Evelyn Wallers and Mr. Newhouse were re-elected directors, and Messrs. H. J. Maeræ and C. S. Andersson and Co. were reappointed auditors, and their remuneration for the past audit was fixed at 250 guineas each.

CITY DEEP.

Sir Evelyn Wallers, chairman of the City Deep, Limited, presided at the annual meeting of shareholders and in moving the adoption of the report of the directors and statement of accounts, said:—In point of profits earned, which is the cardinal test a shareholder naturally applies, the results for the year ended December, 1918, compare unfavourably with those

of 1917. The information given in the reports which we are met here to consider, will, however, have made it clear to you that circumstances during the period under review were against us, and that events over which the management had no control were, in the main, responsible for the setback. Intrinsically, the mine position is very sound, and at no time in its history has the company been in a better condition—given favourable circumstances—to do really well than at present. The difficulty is to get a clear run, free from such disabilities as those we suffered under last year. That is what we need, and that is what we are striving to secure, so far as it lies in our power to influence the governing factors. The ordinary working profit for the year, which was less than that of 1917 by £218,704, amounted to £447,294, or 13s. 4d. per ton milled. In addition a profit of £5,484 was made on the treatment of accumulated slime giving a net working profit of £452,778. To this figure must be added £5,487, being the difference between sundry revenue items and certain expenditure as detailed in the working expenditure and revenue account, giving a total profit of £458,265 to be carried to appropriation account. The balance unappropriated at the end of the previous year amounted to £216,462, and taking in a further small amount of £33 on account of forfeited dividends, the Board therefore, at the end of last year, had an unappropriated balance of £674,760 to deal with. This amount was treated as follows:—Two dividends, totalling 27½ per cent., were declared, and absorbed £343,750; Government and Provincial taxation absorbed £71,434, and we expended on capital account a net sum of £44,636, as shown in the appropriation account; leaving the balance carried forward to the current year's accounts at £214,941, represented by cash and cash assets after allowing for liabilities, stores to the value of £99,914, and cash and investments of £96,415 constituting the bulk of this amount.

Adverse Circumstances.

I regret to say that the tonnage milled showed a considerable decline as compared with the figure for the previous year, and working costs were abnormally high. At the last meeting I had to make the same remark, and pointed out that the rise in costs was due to the all-round increase in operating charges resulting directly or indirectly from the war, which was accentuated by an inadequate native labour supply. I must put forward precisely the same reasons in explanation in the decline in the profit for the year I am reviewing, but in this case the difficulties have been aggravated by still further increases in the cost of all supplies and of white labour, a still greater shortage of native labour, and by the influenza epidemic of last September, which disorganised the whole working of the mine for a considerable period. The effect of the epidemic is well shown by the tabular statement of the monthly profits attached to the report, in which you will see that the profit for November decreased to less than £16,000. The great shortage in the supply of native labour continued throughout the year, and was a very serious handicap. The natives prefer to go to other mines, especially the flat mines of the Far East Rand, and therefore in a period of short supply our position is exceedingly disadvantageous, although we use every effort to make our mine as popular as possible. The crushing capacity of the mine is, at least, 80,000 tons per month, and yet we were only able to deal with 670,100 tons during

the year, which is 70 per cent. of our full capacity. You will have noticed that the revenue per ton, although somewhat less than that of the previous year, remained at a very high figure, but at the same time the value of the ore reserve showed a most satisfactory improvement.

Promising Development.

With regard to development, I am glad to be able to say that the satisfactory state of affairs to which I drew attention last year has continued, and the values of the development at practically all the important points of attack continue to be most promising. The only disappointing district is that lying to the east of No. 1 shaft, which you will notice on reference to the plan is dislocated by a series of dykes, and for the most part shows rather low values. There are indications, however, that we have got away from this disturbance in the most easterly drives, and the values are beginning to improve. Between the two shafts, with the exception of two comparatively small areas of ground, the ore is continuously payable and in some instances exceedingly good. You will notice on the plan, almost midway between the two shafts, a long winze below the 14th level. This winze is 600 feet long, and the average value throughout is 760 inch-dwts., which is equal to a stoping value of about 15 dwts. Coming to the west of No. 2 shaft, the 14th level west drive, which is approaching the Village Deep boundary, showed a marked improvement in value towards the end of the year, and since that date the improvement is still more pronounced. The figures are as follows: The last 200 feet of the drive averaged 536 inch-dwts., equivalent to a stoping value of 7½ dwts; a rise from the extreme end of the drive has now been advanced 90 feet, disclosing an average stoping value of about 16 dwts. I mentioned last year that we had some justification for expecting this improvement, on account of the very good ore that the Village Deep and City and Suburban had exposed in this district, but if such values as those quoted above are maintained our expectations will be exceeded. Fair progress has been made with the incline shafts, and both are now well below the horizon of the 17th level. You will notice that there has been some falling off in the footage accomplished, but not to any great extent. In spite of the great shortage of native labour, we have not neglected this work, which is so essential for the future of the mine.

Underground Connections.

Before I leave the subject of development I would like to say a few words in explanation of the large amounts of money which we find necessary to spend in this way. The chief causes of this are, first, the great depth of the workings, and, second, owing to the fact that we have only one workable reef the necessary amount of shaft sinking and similar dead work is relatively large. As an instance, on the 16th level we shall have to put a large drive, suitable for mechanical transport, in the footwall throughout the property, a length of about two miles, in addition to the parallel reef drive. Experience has shown that, with increasing depth, the expense and difficulty of maintaining long drives permanently open in the reef is becoming prohibitive, and to ensure permanent communication between remote parts of the mine and the shafts we find it better, in the long run, to have special connections which are so situated that

they cannot be affected by caving ground resulting from stoping. In a similar way, the cost of all arrangements in connection with the shafts becomes increasingly expensive as depths and distances become greater. The chairman read a table showing the results obtained in all the drives.

Vertical Shaft.

Last year I explained to you the reasons for our decision to sink a new vertical shaft in order to exploit the extreme southern portion of your property. This shaft, the location of which you will observe on the plan attached to the report, has now been started, and at the end of the year it had reached a depth of 90 feet. The sinking equipment is practically complete, and the ordinary difficulties which attend the commencement of a shaft of this kind have now been overcome. At this date the shaft has reached a depth of 438 feet. For the first five months of the current financial year the profit results have been better than those of the concluding months of the previous year. The monthly tonnages treated, however, are still a good deal below the capacity of the plant, due entirely to shortage of native labour, and consequently the profits remain below the level expected from a mine of the capabilities of the City Deep. At the end of the year 86 of our employees were still on active service. The names of those who have died on active service during the period under review are mentioned in the manager's report, and I desire to record our respectful sympathy with their relatives. In conclusion, I would express our thanks to the consulting engineer Mr. E. H. Clifford, the manager, Mr. P. Sherwell, and those who worked with them, for excellent services rendered. I now beg to move the adoption of the directors' report and accounts for the year ended 31st December, 1918.

Mr. Ronketti seconded the motion, which was carried unanimously.

Messrs. W. Dalrymple and F. G. C. Robellaz were re-elected directors and the auditors were reappointed.

ROBINSON G.M. CO.

The twenty-ninth ordinary meeting of shareholders in the Robinson G.M. Company, Limited, was held at the board room in the Corner House, Mr. F. Raleigh presiding.

In moving the adoption of the report and accounts, the Chairman said: The accounts which are before you indicate that the operations for the past year produced a working profit of £63,758. After taking into account interest and other revenue received, less donations, miners' phthisis compensation, and cost of ore purchased, this sum is increased to £75,419. The appropriation account shows that, after providing for Government taxes and payment of dividends Nos. 52 and 53, totalling 2½ per cent., the balance to the credit of this account is increased by £6,975 as a result of the year's transactions. The balance is invested as follows: Stores, shares and debtors, £67,777; net cash and investments after allowing for all liabilities, £220,296; a total of £288,073.

The working profit obtained during the past year shows a reduction of £174,412 when compared with that of the preceding year. As pointed out in the directors' report, the conditions of working were most unfavourable throughout the year, due to the poor native labour supply and increased

cost of labour and supplies brought about by the war. The direct causes of the decrease may be summarised by stating that the tonnage milled showed a reduction of 125,000 tons, an increase of 3s. 11d. per ton in the working costs and a decrease in the value of the yield of 1s. 2d. per ton.

High Costs.

The reduction in the tonnage treated was largely due to delays to hoisting at the beginning of the year, owing to the abnormal rains and disorganisation in the last quarter of the year owing to the influenza epidemic. In considering the results obtained and the disabilities under which the mine worked during last year, it has also to be borne in mind that the underground operations become more difficult as the life of the mine approaches its end. The present day high costs make it impossible to mine profitably as large a tonnage of the main reef as would have been the case had pre-war working costs prevailed, and it is unfortunate for this company that towards the end of its career such high costs should exist as to make it impossible to mine the large amount of low grade ore developed and remaining in the mine which would have prolonged our profitable operations under more normal conditions. The consulting engineer estimates that at the end of last year there remained a tonnage of 322,000 tons of leader and south reef ore in the mine, together with an ample supply of low grade main reef ore to provide the necessary make-up tonnage during the period that the richer reefs are being exhausted. Of the ore acquired from the Robinson Deep in 1916 there remained about 20,000 tons of block ground at the end of last year. The remaining life of the mine is dependent upon the native labour supply and the working costs. Should it be possible to put out about 40,000 to 45,000 tons per month it is reasonable to suppose that the mine may continue profitable working for a further two years, subject to there being no further increase in working costs. It is impossible to estimate the amount of profit to be earned within this period, owing to the small margin between expenditure and revenue.

Bewaarplaats Money.

You will have noted that costs have increased during the first five months of the current year by 1s. 8d. per ton over the average of last year, against which there has been an increase in the yield of 10d. per ton. The average monthly profits earned for the first five months of this year amount to £3,350, which is considerably below the average monthly profits of last year, and there is every indication that the current year's operations will not be as profitable as those of the past year. In regard to our holding of Crown Mines shares, the rate of dividend paid during last year was reduced to 20 per cent. It has not been necessary to write off any further depreciation from the price at which the shares stand in the balance sheet. The board has had under consideration the matter of distributing to shareholders the sum received under the Bewaarplaats Moneys Application Act of 1917. The total amount so received for the period ended 31st December last is £147,240, and on 17th inst. a bonus was declared from this sum of 5 per cent., equal to 5s. per share, absorbing £137,500. In view of this distribution and of the low profits earned during the current half year, no dividend declaration will be made out of the profits arising from

the company's ordinary mining operations. Shareholders will realise that this bonus is a special distribution from the moneys received from the Government of the Union of South Africa in respect of the disposal by them of the right to mine under a portion of the freehold acquired by this company some years ago, and as the moneys are taken out of the company's cash assets as per 31st December last the value of assets will be depreciated accordingly. I would remind you that the transactions which gave the company this asset were made in 1905 and 1909 by the purchase of the freehold of portions of the company's property for £1,000 cash and 4,300 Crown Mines shares out of the company's then holding of Crown Mines shares. Seeing that a further sum of £6,700 has yet to come to this company under the Bewaarplaats Moneys Application Act, it will be realised that the company will receive in all £153,940 in exchange for the £1,000 cash and 4,300 Crown Mines shares paid, in addition to which it has received half the claim licences on the freehold areas purchased, which have amounted to £1,113 to 31st December last. I think shareholders will agree that the directors made a very fortunate investment on their behalf.

Deaths on Service.

I regret to say that two of our employees lost their lives in the Great War since our last meeting, viz., Gunner C. F. Hengst and Private K. C. Young. We tender our respectful sympathy to their relatives. Since the commencement of hostilities 144 of our employees have enlisted out of an average number of 400 in our employ. About 20 of our employees have not as yet returned from active service. You will, I know, have heard with regret of the death of our late manager, Mr. Palmer Carter, on 4th December last. Mr. Carter had been in charge of the mine since 1913. Your board desires to record its high appreciation of his valuable services, and I know that your deep sympathy is with his widow and family. Mr. G. Hildick Smith was appointed manager in February, and your board has every confidence in his ability to get the very best out of the mine in its closing years. I would like to record the board's appreciation of the services rendered by the consulting engineer, Mr. Percy Cazalet, and the staff at the mine and head office.

The retiring directors were re-elected, and the auditors, Messrs. H. J. Macrae and C. L. Andersson and Co., were reappointed.

GELDENHUIS DEEP.

Mr. A. F. Mullins presided at the annual meeting of shareholders in the Geldenhuys Deep, Limited, and in moving the adoption of the report of the directors and statement of accounts, said: The reports and accounts with which we are dealing to-day are far from encouraging. In spite of every effort made by the management circumstances have been against success, and during the twelve months of 1918 the mine made a gross working profit of only £1,208, a sum not sufficient to cover the standing charges. Examining the figures given you in detail, you will see that the tonnage milled was 591,100, a drop of 57,300 tons. The revenue obtained from the ore milled was £684,688, a drop of £87,567. On the other hand the expenditure rose slightly to £683,480, an increase of £7,929. Taking the results

per ton milled the recovery was 23s. 2d and the cost 23s. 1.5d., a working profit of .5d. per ton. In 1916 the profit per ton was 4s. 10d., and in 1917 3s. The recovery value of 23s. 2d. per ton milled showed a decrease of 8d. on last year's figures, and is the lowest ever recorded for any one year since the mine started. But though this drop of 8d. since last year is considerable it accounts for less than one quarter of the drop in the profit per ton. The other three-quarters are accounted for by the rise in working costs, and these have risen through various well known causes. I hesitate to reiterate them to you, but do so for the sake of shareholders who are not on the spot. Operations were seriously disorganised by the heavy rains at the end of January, 1918, and during February and March; so seriously in fact that it took some months to get into swing again. Then in August there was a breakdown of the No. 2 Stage Hoist, which caused a loss of £5,500, approximately, for the month. All through the year the price of stores was increasing, and for the last nine months of the year the supply of natives was gradually decreasing. This latter trouble was accentuated by the influenza epidemic in September and October. The average native labour force for the year was 4,146 as against 4,351 in 1917 and 5,017 in 1916. Your property, as you know, is essentially one that needs a large native labour force, but we have not been near our full complement for a long time. In March of this year the force rose to about 77 per cent., but since then has been steadily dropping again. It is consequently impossible to keep the mill supplied to its full capacity, and under present day conditions it is essential to do so if a reasonable profit is to be made.

Heavy Loss for Five Months.

While on this subject let me bring the record down to later times. For the five months ended 31st May last a loss of £7,670 was made. In all since January, 1918, to end of May, 1919, 831,000 tons were crushed at a loss of £6,462. Briefly, during that period the cost of producing the gold was higher than the value of the gold produced, and on such a basis the mine cannot continue working. The yield must be increased or the costs decreased. The former is out of the question, beyond temporary assistance from the inclusion of a little higher grade ore from taking out shaft pillars. The problem is therefore one of in some way reducing the costs. Your directors have considered this very carefully, and have decided that the best course open to them is to curtail development for the time being. During the period mentioned above some £40,000 have been spent on development, and at this cost only some 375,000 payable tons of ore have been developed, far less than the amount necessary to replace the ore drawn from reserves. As you know, the amount of development work done has been gradually decreasing in recent years, but it has now been decided to close it down to practically nothing. It is useless to work at a loss in order to develop small amounts of ore which it is possible might never be worked at all, and the saving of this expenditure may make a small monthly profit possible. In addition to this, the natives employed in developing can be used for breaking rock for the mill. By adopting this course, it is hoped that the mine will show a small profit monthly, and will thus be enabled to continue working for a considerable period in the hope that some substantial relief in the cost of stores or some considerable augmentation in the native labour force will alter the prevailing conditions

that your Board would be justified in re-considering the question of re-suming development.

Substantial Relief Wanted.

Shareholders, however, must not misunderstand the position. The mine is one which has been very hard hit by the rapid rise in costs during 1918, and any relief afforded will have to be quite a substantial one in order to bring into the region of profitable working large masses of ore within easy reach, but now unfortunately below the pay limit. Failing that the life of the mine must be appreciably shortened. The company still owns a considerable area of ground in the bottom part of the mine, which has not yet been opened up. The chances of obtaining a profitable return from developing this ground are at the moment, to say the least of it, problematical, and, in any case, we could not pay for this development work out of current revenue. Taking the accounts you will see that in addition to the £4,208 referred to above, £2,942 were received, being the difference between sundry items of revenue and expenditure, so that the total profit was £4,150. From the directors' report you will see that £15,430 were received from forfeited dividends, sales of property, Bewaarplaats' monies and equipment sold. £180,520 were carried forward from December 31st, 1917, so that in all the credit side of the Appropriation account amounts to £200,100. Undermining rights and Government Taxes absorbed £14,460 of this, and two dividends, Nos. 37 and 38, £13,931, leaving an unappropriated balance of £151,708, of which £70,665 was net cash and investments.

Since the end of 1918 the stores account has been reduced by some £10,000, and December next is expected to show a further marked diminution. You will have seen that your Board has declared a dividend of 2½ per cent. for the half year ending 30th June next, out of the funds accumulated during previous years.

The Small Holder.

During the year a small area of ground was re-purchased and donated to the Geldenhuis Small-holders' Association for the purpose of erecting thereon a public hall, which it is hoped will be used by the Education Department later on as a school during the day-time for the children residing in the settlement. This has reduced the ground sold to about 1,933 acres, the selling price of which amounts to £19,488. Owing to the difficulties purchasers experienced in raising money, due to their not being able to obtain title to the ground for the reasons mentioned at the last annual meeting, the company agreed to assist by granting loans to approved applicants for a limited sum, on condition that the loans be repaid within three months from the date on which notification is given to the purchasers that the company is in a position to pass transfer. The loans so far granted total £2,150, and the interest charged is at the rate of 6 per cent. per annum. In this connection you will remember that a Small Holdings Bill has just been passed, which will remove all the difficulties encountered in the past, and the necessary steps have been taken to comply with the provisions of that Bill. It is therefore hoped that purchasers will be able to obtain transfer before the end of this year.

Some three months ago your chairman, Sir Evelyn Wallers, owing to other duties, found himself compelled to resign his position. He had acted in that capacity for four years, and I am certain you will all join with me in express-

ing our grateful thanks to him for the care and ability with which he presided over the company's affairs. I am glad to say we shall still be able to profit from his advice, as he is retaining his seat on the board. Your manager, Mr. Pam, has been actively engaged in war work, but has now been demobilised, and will be returning in the near future. During his absence Mr. G. Tucker took his place, and managed the mine with marked ability. It was a matter of the keenest regret to the Board when Mr. Tucker felt compelled to resign in December last, owing to ill health. Mr. Tucker had been with us for over nine years, and previous to that for very many years on the Geldenhuis Estate, and during the whole of that time had proved himself a most loyal and efficient servant to his employers. To Mr. Clifford, the Consulting Engineer, to Mr. Rose, who is acting manager pending Mr. Pam's return, to the officials and to the staff we owe our best thanks for their constant efforts on behalf of the company. At the end of last month there were still 45 of the company's employees who had not returned from active service. We, unfortunately, have to deplore the deaths of six of our staff during the year 1918.

Mr. Ronketti seconded, and the motion was carried unanimously.

VILLAGE DEEP.

Mr. H. C. Boyd, chairman of the Village Deep, Ltd., presided at the annual meeting of shareholders, and in moving the adoption of the report of the directors, said that during the past year the agreement with the Government referred to in the previous report was completed for the acquisition of the undermining rights under Springfield Township in respect of about 6.9 claims, and negotiations were also concluded for the purchase for the sum of £7,330 of the undermining rights under Springfield Extension and portion of La Rochelle, these latter embracing an area of nearly 16.3 claims. The position of the ground thus acquired is shown on the plan which accompanies the report. You have doubtless read carefully the manager's report, in which the disadvantages under which our mine has laboured during the past year are clearly set forth. In the early months work was disorganised by the large amount of water which had to be handled from the mine as a consequence of the excessive rainfall, while toward the close of the year the influenza epidemic entailed losses in October and November, the loss for the latter month being £7,164. The native labour supply was generally quite inadequate for our requirements, heavy special expenditure had to be incurred underground, white wages and the cost of stores and materials advanced further, and ever-increasing mining difficulties were experienced owing to the great depth at which operations were proceeding. As a result of these conditions, combined with a decrease in the recovery to 26s. 2d., or 1s. 8d. per ton less than that of the previous year, the working profit diminished by over £150,000 to £66,257. This was increased to a net profit of £75,499 by the difference in our favour of the sundry items of revenue and expenditure detailed in the account; the most noticeable item of revenue being £6,000, representing the sale of ore to the City and Suburban Gold Mining Company mentioned in the Directors' report for 1917. There was a net expenditure of £22,300 on underground equipment, as detailed in the manager's report; annuities on account of undermining rights pre-

viously acquired and the payment in respect of the last acquired mining rights amounted to £18,866; and £1,623 bewaarplaats moneys were received, making the net debit to capital account £39,543. Taxes absorbed £5,373. The 3½ per cent. dividend declared in June accounted for £39,775, while the profits for the second half of the year were insufficient to permit of the declaration of a dividend for that period. Of the unappropriated balance of £150,884 carried forward, the net cash was £35,129, while the stores on hand amounted to £99,849, or some £5,000 less than at the end of July, 1917. Every effort is being made to decrease the amount of stores carried, and at date their value has been reduced to about £82,000.

Satisfactory Development.

A satisfactory feature was that development operations were continued on a considerable scale, the chief work being on the 22nd to 28th levels inclusive; the main incline shaft reaching the horizon of the 29th level, a vertical depth of 5,635 feet below the surface. A total of 20,370 feet in all was accomplished, of which 12,731 feet in reef formation were sampled, showing about 84 per cent. payability. You will recollect that at the end of 1917 a large tonnage remained only partially valued; for the proving of this ground and that of which the undermining rights have been acquired 6,575 feet of boxhole raises were put in. Of the total ore valued during the year 73 per cent. proved payable; a very noticeable improvement on the previous year's results, in conformity with the belief then expressed that the limit had been reached of the definitely unpayable zone to the west of the main incline. In all, 840,740 tons, averaging 6.3 dwts., were developed, the value being about ¼ dwt. per ton lower than that of the 1917 disclosures. The ore reserves were re-estimated at 2,327,200 tons, of 6.3 dwt. per ton, an increase of 453,200 tons, but a decrease in average value of .3 dwt. Of this reserve some 524,000 tons are not at present available for stopping, being in shaft and boundary pillars. In addition, about 330,000 tons of block ground yet required further valuing.

During the current year there was appreciable improvement in the native labour supply till March, when a full tonnage was crushed, but the tide has again turned, and we must expect that during the next few months the wastage will continue. Following a severe earth tremor, April operations were considerably hampered through the loss of several current stopes, which have not yet been fully recovered. This month the current stopes have shown signs of great weight, and to the detriment of rock breaking special protective measures have been necessary. On the average, costs remain but little less than last year, while the recovery has been 27s. 1d., as compared with 28s. 2d. per ton. This unfortunately is as good a grade as can be expected from the present ore reserves.

This Year's Operations.

The total working profit for the first five months of the year is only £16,904, and unfortunately considerable capital expenditure has had to be faced. Some £13,000 have already been spent on this account, and £22,000 remain to be expended, chiefly in connection with pumping plant and equipment of the main incline shaft. Your directors report that under the circumstances no dividend can be declared for this half-year. The mine remains a one-reef proposition. Some further exploratory

work has been done in the south reef on the 22nd and 24th levels, but with negative results. It has now been decided to drill a certain number of holes into the position of this reef at selected points in the lower levels. Development of the main reef leader by foot wall driving has continued energetically this year, and while comparatively little ore has as yet been fully valued the exposures of this reef at certain points have for some months been more satisfactory than for a considerable time previously; for instance, the lowest winze in the mine, that from the 27th level immediately over the main incline, has averaged 500 inch dwt., while the average exposures in the winze from the 24th level in the middle of the bewaarplaats ground bought a year or so ago have been over 700 inch dwt. That such values should obtain at these depths is encouraging, but we are advised that while undoubtedly the percentage of payability will be higher, so far as it is possible to judge to-day, taken as a whole, the ore developed thus far this year will not, when fully valued, show any marked improvement on last year's results. It must be realised that the expense and difficulty of working at these great depths tend to grow steadily—operations are proceeding below sea level—and more than average grade is required to compensate for such conditions. As the consulting engineer truly says in his report, the difficulties underground have to be experienced to be fully realised; and certainly unless the plant can be operated to the full capacity and costs reduced, the profits from our mine must remain very moderate. Under the existing mining regulations, and allowing for the time occupied in getting to and from the faces, and preparing to start operations, the effective working day for the whole labour force is less than six hours, and it is very necessary that there should be a better disposition than is at present shown by the bulk of our employees to accomplish as much as possible in the time available.

The additional pumps for No. 3 main incline shaft, which have been so long awaited, have arrived, and been installed. The motors have yet to come forward, but it is hoped to resume shaft sinking very shortly. An excellent system has recently been installed for filtering the underground water, so that it can again be used for dust allaying purposes. This has led to very material reduction in the cost of pumping. In all, 222 of our employees enlisted during the war, of whom unfortunately 21, whose names are again recorded in the manager's report, have laid down their lives; 43 are still absent on service. As is reported, the remainder have supported the various war funds most generously. The Board desires to record its high appreciation of the services rendered by the consulting engineer, Mr. Stuart Martin, the manager, Mr. Whitehouse, and the staff generally, during an exceptionally trying period.

The motion was carried unanimously. Major Ffennell and Sir Evelyn Wallers, the retiring directors, were re-elected.

BANTJES MINE.

The annual meeting of shareholders of the Bantjes Consolidated Mines, Limited, was held in the board room, Corner House, Mr. F. Raleigh presiding. Of the total issued capital of 502,306 shares, the representations personally and by proxy at the meeting was 227,139 shares, of which number the directors held and represented 215,939.

The Chairman, in moving the adoption of the reports and accounts, said: The reports and accounts before you deal very fully with the operations of the past year and explain the position which led up to the closing of mining operations at the end of November last. At the last annual meeting held in June, 1918, I stated that the policy of the board was to prospect the reefs on the 17th level from the incline shaft, to continue sinking the shaft and endeavour to reach the 18th level, with the object of prospecting the reefs on that horizon. This programme was carried out, but unfortunately the values disclosed were disappointing. On the 17th level west of the incline for a distance of 225 feet sampled the values showed an average of just over 200 inch-dwts. In the winze connecting the 16th to the 17th level the average for 220 feet sampled was 266 inch-dwts. Whilst the leader was exposed in the sinking of the incline shaft between the 17th and 18th levels and showed good values for a distance of 60 feet, they were unfortunately not maintained when driving was commenced on the 18th level. Prospects were obtained in the south reef on the 16th and 17th levels, which showed it to be valueless at these points.

Effect of High Costs.

You will gather from the reports before you that the high costs due to the war made the continuation of operations impossible without incurring further heavy losses. In this connection I would remind you that the working loss for the year 1916 was £9,326 when accomplishing 18,600 feet of development, the loss for 1917 was £24,530 when accomplishing 13,200 feet of development, and the loss for the first nine months of last year was £1,350 when only 2,877 feet of development was accomplished. A total working loss of £35,206 was thus made in the 23 years ending 30th September last. During this time the ore reserves were depleted owing to the tonnage developed not equalling that mined, and on the raising of the pay limit due to rising working costs.

Your board was advised by the consulting engineer that, in order to continue working after the end of the year under review, an additional sum of £15,000 to £20,000 would be required for renewals to the plant and equipment on the surface and underground, and that the tonnage immediately available and accessible to the incline shaft only amounted to about 95,000 tons of a value of 6.3 dwts. Whilst it would have been possible to have gutted the mine, it is very questionable whether any profit would have resulted, in view of the expenditure which would have had to be incurred on renewals to the plant and the increased costs due to decreasing scale of operations. After taking all the circumstances into consideration, and on the recommendation of the consulting engineer, the board decided to close down operations, at the same time making arrangements for testing the reefs by a drive from the Consolidated Main Reef Company's western boundary to a point at a depth of about 500 feet below the 18th level, which is the lowest level prospected by the company.

The Company's Future.

In arriving at this decision your board has the satisfaction of knowing that everything possible has been done during the last few years to keep the mine open. The reefs above the 16th level have been thoroughly prospected, and the leader has also been prospected in the vicinity of the incline shaft on the 17th and

18th levels. Had it not been for the war conditions there is no doubt that the mine could have kept going until the reefs at the 19th, 20th, and 21st levels had been prospected. The drive which is being driven from our eastern boundary will prospect the reefs for a distance of about 3,500 feet to the point where the incline shaft would ultimately reach the limit of first stage hoisting, and will test the values for the whole eastern half of the mine at that depth. The values obtained in this drive will have a most important bearing on the company's future, and it is hoped that they will be such as will encourage the Board to reopen mining operations. In the meantime the company's plant is being retained as a complete working unit. Only such movable plant is being sold as can be replaced within a few months.

In connection with the efforts made to keep open the mine, I would remind you that for the past two and a half years your directors and London agents have entirely waived their fees, and for sixteen months prior thereto only half fees were received by your directors, and reduced fees by the London agents. The whole of the Rand Mines Head Office fees, comprising the services of the technical and other departments, have been entirely remitted during the past two and a half years, with the exception of a small nominal charge of £300 per annum, whilst for two years prior thereto reduced fees were paid. An arrangement was made for preferential treatment of the mine in regard to native labour supply in 1917, so that if the mine could have recovered itself it would not have been prevented from doing so by lack of the necessary labour to do essential work. Furthermore, arrangements had been made in 1917 for financing the company to the extent of £75,000, for the purpose of enabling a vigorous development policy to be adopted in the leader, but your board was unable to take advantage of the offer of a loan, as no sooner had arrangements for drawing against this loan been concluded than the values in the leader development nearly all became unpayable.

The Exploratory Drive.

In connection with the exploratory drive being driven by the Consolidated Main Reef Mines and Estate, Ltd., your board has entered into an arrangement with that company whereby the right to work 26 of our claims situate on our eastern boundary is given to it at a royalty of 1s. 6d. per ton of ore conveyed to the crusher station. The Consolidated Main Reef Company is now running six levels from its workings into this area, and we hope stopping will shortly take place there. Up to the end of last month 3,244 tons had been mined from development faces by the Consolidated Main Reef Company. You will see from the report before you that a departmental inquiry was made by the Government Mining Engineer into the closing of the mine; this report was published in the Union Government Gazette of December 20 last, for general information. The report states that every effort appears to have been made to keep working costs as low as possible, and that the policy adopted by the company is considered to be the one likely to be more beneficial to both shareholders and the State.

The working profit for last year totalled £13,696, which was all earned during the last three months of the year, as a result of the decision to close the mine. During this period of three months practically no develop-

ment work was done; also a thorough clean up of the underground workings and broken rock and sweepings was made, which were treated together with surface accumulations. It is certain that this profit would not have been earned had the mine continued to work on the ordinary lines of a running concern. Since the close of the year, i.e., for the five months ended 31st May, a profit was made on the clean up (which is still continuing on a limited scale) of £7,097; sales of machinery and plant realised, £3,881; sundry revenue, including rents and sales of second-hand material previously charged to working costs produced, £7,285; making the financial improvement £18,263. Further certain cash assets, chiefly stores, were also realised producing £4,743; making the total cash increase for the five months £23,006. The company's financial position at the end of last month was as follows: Cash on hand after, providing for liabilities, £53,343; cash assets, stores, sundry debtors, £19,154; Rand Mines Power Supply Co., Ltd., compressor account, £13,646; total, £63,143.

I regret to say that since our last meeting we have heard of the death of the following employees whilst on active service, i.e., Sergt. John Williams and Corpl. J. R. Dell. We offer our deep sympathy to their relatives. Our late manager, Mr. R. Beaumont, resigned his position in August last and was succeeded by the mine captain, Mr. G. Wilson, who acted as manager during the closing down of operations. Mr. H. Stuart Martin continued to act as consulting engineer of the company, and to these gentlemen and their staff at the mine and head office we are indebted for good work done. I now beg to move that the directors' report, balance sheet and account for the year ended 31st December, 1918, be received and adopted.

Mr. G. W. Stephens wanted to know if the directors were prepared to let the mine to certain shareholders, who were, he said, prepared to advance money for the working of the mine on a sounder footing?

The chairman replied that he did not wish to pledge his colleagues to anything. It might be reasonable to assume that the directors would let the mine on tribute if it were in the interests of shareholders. It would not be in the interest of shareholders, for instance, if anyone worked the payable ore out of the mine and then stopped operations. Certain development work would have to be carried out, otherwise the shareholders' interests would be neglected.

M. Catesby Holland aggressively criticised the working policy in relation to the Bantjes and the system of control by Corner House, and moved: "That the directors be and are hereby requested to convene a special meeting of shareholders for the purpose of obtaining a mandate from shareholders as to whether the mine shall be run by the same Board of Directors, or whether a new Board of Directors and new secretaries shall be appointed, or whether the shareholders alternatively do confirm the policy of having leased a certain portion of the mine to the Consolidated Main Reef and awaiting the re-opening of the mine until results have been obtained."

The chairman replied in some detail to Mr. Holland's criticisms. He said that the percentage of payable ore developed had decreased as years passed, and he quoted from past reports by the company's technical experts to show that they had always frankly revealed the position and prospects of the development work. As regards the technical control, he

totally disagreed with Mr. Holland's remarks, and he thought they were uncalled for. Diamond drills had been used to test the leader from the south reef workings. The results from prospecting with the diamond drills had been unfortunate. On the point of the neglect of the maintenance of plant, they should remember that for some years the mine had been living from hand to mouth. They had not been able to maintain the whole of the equipment in first-class order. In conclusion, the chairman thought that their technical gentlemen's opinions were equally as valuable as Mr. Holland's opinion.

The adoption of the report and accounts was agreed to, and Messrs. Raleigh and Rogers were re-elected to the Board. The appointment of Mr. A. F. Mullins as a director was confirmed.

Mr. Holland ultimately withdrew his motion in favour of another suggesting that the Board consider the advisability of calling a special meeting for the purpose indicated. On a vote, the motion was lost.

AFRICAN FARMS, LTD.

Mr. Julius Jeppe presided at the seventeenth ordinary general meeting of the shareholders in African Farms, Limited which was held at Jeppe Arcade. In proposing the adoption of the report and accounts, the Chairman said: The audited accounts and directors' and auditors' reports have been in your possession for some time, and you will have seen that the result of the year's work has been quite satisfactory. I will deal with a few of the chief items in the accounts. The capital at £649,631 is unaltered. Loans to this company at £43,371 is an increase of £10,971. Sundry creditors show a decrease of £10,135 as compared with last year. Profit and Loss Account appears this year with a credit of £25,882 after deducting the debit of £2,985 appearing last year. Property account shows a decrease of £18,307, the cost of five farms and the concession in Swaziland sold during the year being deducted; one farm was purchased, however, for ranching purposes. Share investments.—This account at £141,870 shows a decrease of £4,964. The total cost of shares sold was £13,122, and a sum of £14,807 was written off some of your shareholdings to provide for possible depreciation. Shares, however, to the value of £23,165 were purchased during the year. Farming Ventures, Livestock, etc.—This account at £60,123 shows an increase of £38,846 owing to the inclusion of the balance of the Mafeking Farming Venture and the Maritzani dam. The company having acquired Mr. L. S. Meintjes' interests in the ranch, now owns the whole venture. In addition, there has been certain expenditure in connection with the farms in the Orange Free State and the cattle ranches in the Rustenburg and Waterberg districts. Plantations, Buildings and Fencing.—This account standing at £14,074, shows a decrease of £1,091. An amount of £2,459 has been written off, while £1,368, expended during the year, has been debited to the account. Mining ventures have been increased by the acquisition of an interest in a tin concession in Swaziland. Maritzani Dam.—This item which appeared in last year's accounts has been included in the Mafeking Farming Venture. Bonds and Loans, £123,668, show an increase of £22,706. The bonds, as you are aware, represent the balances

owing on the sale of farms. The cash on loan is fully secured and bears a fair rate of interest, and the whole of the cash is at call and available for the business of the company.

Increased Salaries.

Coming now to the profit and loss account, we find that the current cost of administration, etc., is £7,310 15s. 11d., as against £6,402 8s. 6d. This increase of £908 is accounted for by an increase in the salaries of £1,391 6s. 3d., due to the engagement of a highly skilled land manager. On the other hand, economies have been effected of £382 in reports and inspection of farms, £102 in law charges, £127 in farm taxes due to the sale of farms, whereas "charges account" has gone up £230. There are no other items on the debit side of the profit and loss account, which need elucidation, though I may perhaps point out that income taxes amounting to £277 11s. were paid for the years 1916-1918. In addition to this, we are paying the Cape Government £324 per annum for the privilege of being allowed to farm in that Province. During this year (1919) the Free State have also discovered that we are what they call a foreign company, and they, too, are charging us a tax similar to the Cape Province, only as yet not quite so much. You will, no doubt, wonder what a Union of South Africa means if a company is considered a foreign company by every Province within that Union, and has to pay a special tax to each Province for the right to carry on farming operations.

Turning to the revenue side of the profit and loss account, we find that our receipts from interests have been £778 less than the year 1917, and that our dividends have increased by £9,172. An increase of £277 is also reflected in the revenue from rents, though there is virtually a decrease of £315 in this item, because in the accounts now before you we have included in the rents revenue received from Klipdam, which in previous years was shown as a separate item. The profit on sale of shares show an increase of £14,298 15s. 9d., and on sale of farms £2,202 18s. 2d. Then the last item, namely, "profit on farming ventures," shows a credit of £3,788 2s. 5d. This is entirely due to the settlement with our former partner in the Mafeking ranch. It becomes necessary, when we dissolved partnership with him, to value the assets, and the result is reflected in this item. Finally, we go forward with a profit for the year under review of £28,867 10s., of which amount £23,393 has been furnished by dividends on our shareholdings. Of this £23,393 dividends, Leenwpoort produced £18,602. Our holding in this company has not been altered to any great extent, but I fear we cannot look forward to receive anything like the same amount for the present year. The annual meeting of this company takes place to-day, and, as usual, the directors' report and proceedings of the meeting will be attached to the African Farms documents and circulated to the shareholders. Owing to the very considerable fall in the price of tin and to total dislocation for at least three months of all mining operations caused by the "Spanish Influenza," the excellent results obtained during the first six months were not maintained during the latter part of the year, and the first quarter of this current year; as a matter of fact, normal conditions there are only now being restored, but the price of the metal is still about £100 per ton lower than at the same time last year; it must, therefore, be obvious that we cannot expect dividends to anything like the amount we received last year.

Farming Ventures.

With regard to our farm properties and farming ventures there is not very much

to tell you. In spite of strenuous endeavours to effect sales, we have only been able to dispose of five farms and a Swaziland concession, the latter showing a book profit of £2,831, although virtually this transaction would show a loss if we had not written off during past years very large sums for depreciation. The five farms were sold at what they stand at in our books. We have continued our policy of encouraging occupation of our farms in every possible manner, but have only succeeded in leasing five additional farms during the year. Of the total of 145 farms which you possess, 21 are utilised for our farming ventures and 69 are let, all at very low rentals. As you will notice from the schedule attached to the directors' report, the total area of your freehold farms or portions of farms amount to 1,430,301 acres. Of this area 780,000 acres are situated in the Gordonia district, Bechuanaland. This district is becoming more popular every year, as the railway from Uptington, which passes through two of your farms, affords the facilities for forwarding livestock to the market, and the district is rapidly coming into favour. We may confidently expect to dispose of farms at good prices in the near future.

Going now to our own farming ventures, we have considerably increased our ranching. The Mafeking ranch is being ably managed by Mr. L. J. du Toit, and good progress is being made in breeding bulls and slaughter stock. You will remember that the greatest obstacle to successful ranching in that district has at ways been the Gallantziekte, and it was, therefore, with great pleasure that your directors notice an article headed "Science Triumph," which appeared in the "Sunday Times" of the 23rd March this year. From this it would appear that Sir Arnold Theiler has, after many years' careful investigation, discovered the cause of this dread disease. It remains now only to find the cure, and in the meantime there seems to be no difficulty in the uses of preventative measures. The stocking of our farms in the Winburg district of the Orange Free State is being proceeded with. Fair crops have been reaped during the year, and the outlook is promising. I regret to state that the death-rate at our Rustenburg ranch has been very heavy, especially amongst the young stock. Our manager, however, anticipates speedily bringing down the rate to normal again. The citrus grove near Rustenburg has not yielded an adequate return, owing to the lack of facilities to export the fruit, but export has now been resumed, and the current year should show a marked improvement in the returns.

The company's one-third interest in the farm Maraisdrift in the Heidelberg district, has just been disposed of on terms which your directors consider satisfactory.

In conclusion, I would like to express the directors' appreciation of the services rendered by our secretary and his staff.

The report and accounts were adopted.

The retiring directors Messrs. J. Emrys Evans, C.M.G., and E. M. Hind, were re-elected, and the auditors—Messrs. Alex. Aiken and Carter, and Mr. H. G. L. Paichaud—were re-appointed.

S.A. GOLD MINES.

The sixteenth ordinary general meeting of shareholders in the South African Gold Mines, Ltd., was held to-day in the board-room at Jeppe Arcade, Mr. Julius Jeppe presiding.

In presenting the report and accounts Mr. Jeppe said: From the accounts in your hands you will notice that the capital of the company and the debit for debentures remain un-

altered. The period for which these debentures were issued expires on the 31st December, 1922. You will remember that the original debenture debt was £308,000; these debentures have to be redeemed annually from the 31st December, 1913, at the rate of £30,800 a year. We were, however, in a position to purchase in the open market in advance of the annual drawings, so that at present there are outstanding £38,470 of debentures, which do not necessitate redemption before the 31st December, 1921. Sundry creditors show an increase over last year of £25,391. Claims and mining ventures have been increased by £4,179 owing to the acquisition of an interest in a mineral concession in Swaziland. Farms and mineral rights on farms remain the same as last year. Shares on hand show an increase of £37,900, which represents the cost of shares acquired, less sale of shares effected during the year. The sales of shares during the year showed a net profit of £1,686, but depreciation amounting to £4,441 has been written off some of the shares to bring them down to the market price at the close of the year. Sundry debtors at £3,528 are chiefly dividends on shares which have since been received. Cash account, £100,591 is on short loan, bearing a fair rate of interest and fully secured.

Administration expenses, excluding prospecting and pegging, are less than £2,000 for the year, and the profit and loss account shows a credit balance of £6,583 after making allowance for depreciation on shares, payment of debenture interest, and Government income tax. This still leaves a balance of £13,079 3s. 6d. to the debit of profit and loss account.

This concludes my elucidation of last year's accounts, and from it you will gather that the company has really done very little business during that period. The directors have had no favourable opportunity of expanding your operations or activities. There is, however, a possibility of your being called together by a special general meeting within the near future to discuss and vote upon a scheme which is now under consideration. I would like to express the directors' appreciation of the services rendered by our secretary and his staff.

The report and accounts were adopted.

The retiring board—Mr. Julius Jeppe, Sir Abe Bailey, Bart., M.L.A., Messrs. E. M. Hind, J. Emrys Evans, C.M.G., and B. Southwell—were re-elected.

The auditors—Messrs. F. W. Diamond and C. L. Andersson and Co.—were re-appointed.

LEEUWPOORT TIN MINES.

Presiding at the seventh ordinary general meeting of shareholders in the Leenwpoort (African Farms), Tin Mines, and moving the adoption of the report and accounts, Mr. Julius Jeppe said:—Before moving the adoption of the directors' report and accounts for the year 1918, I should like to make a brief survey of the work done during the year, touching upon the most important features, and also to bring your information up to date regarding operations since the close of the last year. From the accounts, which have been before you for some time, you will see that the total revenue was £157,130. (I will leave out shillings and pence), being an increase of £26,094 over the previous year. The total working costs amounted to £97,627, an increase of £4,887, so the working profit at £59,502 showed an increase of £21,207 over the figure for 1917.

The addition of the amounts from rents and sundry revenue, brought the total profit to £60,399, of which, after allowing for depreciation, writing down development account, and providing for the South African dividend and income tax, £45,030 was carried to Appropriation Account. After paying dividends amounting to 17½ per cent. during the year, the amount carried forward was £16,619.

Effects of Influenza.

To get a clearer conception of the results for last year, it is desirable to divide the year into two periods; the first, the undisturbed period to the end of August, and the second, the last four months of the year, when work was disorganised owing to the influenza epidemic. There is no doubt that, but for this unfortunate outbreak, the profit would have shown a still greater improvement, since the profit for the first period named, amounted to over £58,000. During the latter period, the September profit was absorbed by the loss incurred during the last quarter, when about 5,700 tons were milled, as against about double the amount in the previous quarter. This accounts for most of the reduction in the tonnage milled for the year, which, at 39,843 tons, showed a drop of 6,695 tons. Owing to a shortage of native labour at the beginning and at the end of the year, the development footage showed a reduction of over 3,000 feet. For this reason the ore reserves showed a decrease of approximately 20,000 tons during the year, and there was a slight decrease in value. At the end of the year, the reserve payable tonnage amounted to 65,911 tons. During 1918, about two-thirds of the ore milled came from ore reserve blocks, and a continuance of this percentage would give a present margin of almost 18 months ahead of the mill, on the anticipated increased crushing basis of 5,000 tons per month, which, in view of the difficulties encountered, must be considered satisfactory. For the first eight months of the year, working costs were 11s. per ton, including realisation, development redemption and head office expenses, as against 39s. 10d. per ton for the previous year, and for the last four months were 66s. per ton, due to lower tonnage crushed, for reasons already stated. The average for the year was 49s. per ton, but development redemption was charged at 4s. only, as

against 6s. in 1917. This year's expenses, however, included abnormal expenses due to the epidemic, and to dewatering Spruit workings, which amounted to 3s. 9d. per ton. There was, therefore, an average rise in costs of approximately 7s. 6d. per ton, due partly to the reduced tonnage crushed, and also to increased cost of mining and milling ore from greater depths.

Smelting Undertaken.

Owing to the big difference between the price of Straits Tin in London and the price quoted us from Singapore, it was decided to undertake our own smelting operations. Difficulties incidental to most new enterprises were encountered, but these have been overcome, and operations are now going smoothly. When reliable figures as to smelting losses have been obtained, it will be possible to decide whether it is better to continue smelting the total output, or only sufficient to satisfy local demands. This demand is growing, and should be of mutual benefit both to the consumer and ourselves, since transport charges are saved for both. The average price obtained for tin during the two previous selected periods of the year was £319 (up to the end of August), and £273 during the latter period, and the average price during 1918 was £301. For the year 1917, the average price was £218. We were fortunate in being able to produce our biggest outputs during the middle four months of the year, when tin was at its highest price. It is, of course, quite impossible to forecast the price of tin in the future, but from January to June this year the average price has been about £100 per ton lower than for the same period of the year under review. During the year development was carried out at only two of the mines, the Spruit Extension and Adit Workings, in each case with satisfactory results, the values being encouraging.

Present Position.

Before drawing to a close, I will give you a brief summary of the results so far this year. Owing to the scarcity of labour and consequent disorganisation after the epidemic, losses were incurred during January and February, but by the end of May that loss had been made good.

The tonnage milled has been steadily increased from 2,305 tons in January, to 4,021 tons in May, and as native labour is now more normal, a future increase in tonnage milled may be anticipated. Working costs have been steadily reduced from 61s. 1d. in January to 45s. 1d. in May, and a further reduction is probable. Development footage in January was only 20 feet, and this has been gradually increased to 466 feet in May. A trial of Jackhammers for development, has proved them capable of satisfactory work, and, with this assistance and increased labour, it is confidently hoped to bring the development footage to over 1,000 feet monthly, which should soon place the ore reserves on a sounder basis. Development has been re-started at the Spruit Workings, and good values have been located beyond the rather broken ground north of the shaft. This opens up considerable possibilities for the North Spruit Extension. The following development faces in the various workings are showing highly payable ore: Spruit, 4th level north; South Spruit Extension, 3rd level north drive; and 4th level north drive. The 5th level cross cut has just exposed the reef, but not to its full width, the biggest width so far exposed averaging 2.1 per cent. over 16in. In the Adit Workings a drive off No. 1 winze and a winze off No. 4 stope are exposing good values.

The additional plant, estimated to be capable of handling 5,000 tons monthly, is now completed, and with a sufficient supply of native labour the mine can produce this tonnage. A few boys are kept working on the alluvial deposit, which has a profitable margin at the present price of tin. With the present encouraging development the outlook is promising, since the future of the mine depends on this, as well as on the price of tin. I am pleased to say that most of the employees who went on active service overseas have since returned and resumed their duties. In conclusion, I desire to express the directors' appreciation of the work done by the manager, Mr. J. Irvine Jameson and his mine staff, and the head office staff.

The report of accounts were adopted.

The retiring directors—Messrs. A. G. Gill and E. M. Hind—were re-elected, and the auditors—Messrs. Fraser and Mackenzie and Alfred E. H. Williams—were reappointed.

MUNICIPAL COUNCIL OF JOHANNESBURG

GAS, ELECTRIC SUPPLY AND TRAMWAYS DEPARTMENT.

P.O. Box 699.
Telephone 3612.

PRESIDENT STREET, WEST,
JOHANNESBURG.

GAS COKE FOR SALE

Lots under one ton in bags: 1/6 per bag of 100lbs., plus 6d. each for empty bags.

Lots of one ton and over in bags: 25/- per ton (20 bags), plus 6d. for each empty bag.

Lots of five tons and over IN BULK: 22/6 per ton.

All the above prices are f.o.r. Gas Works Siding, Johannesburg

All Cheques payable to Town Treasurer.

Country Cheques must include exchange.

Latest Company Registrations.

Vanza, Ltd., 163, Second Avenue, Daspoort Estate, Pretoria; capital, £280.

Cujerat, Ltd., 45, President Street, Johannesburg; capital, £500.

Essop, Ltd., Kruger Street, Elsburg, Transvaal; capital, £600.

Forley Company, Ltd., 63, Commissioner Street, Johannesburg; capital, £600.

The D. Investment Syndicate, Ltd., Trust Buildings, corner Fox and Loveday Streets, Johannesburg; capital, £8,100.

Aboo, Ltd., 84, Prinsloo Street, Pretoria; capital, £1,000.

Arvind, Ltd., Reneke Street, Schweizer Reneke; capital, £500.

Deep Water Diamonds, Ltd., 9, 10, and 11, London House, Loveday Street, Johannesburg.

Canadian Manufacturers, Ltd., 13, 14, 17 and 18, Portland House, 107, Commissioner Street, Johannesburg; capital, £5,000.

Ghanchi, Ltd., 25, Sacke's Buildings, Joubert Street, Johannesburg; capital, £7,000.

Hegter, East & Co., Ltd., 12, New Court Buildings, Market Street, Johannesburg; capital, £1,000.

Levson's, Ltd., The Studio, Hepworth's Buildings, Pritchard Street, Johannesburg; capital, £100.

The Western Province Farmers' Agency, 58d, Becker Street, Newtown, Johannesburg; capital, £2,000.

Bhajer, Ltd., Relief Street, Piet Retief; capital, £1,200.

The African Plantations, Ltd., 31, 32 and 33, Permanent Buildings Harrison Street, Johannesburg; capital, £7,500.

The Union Trading, Ltd., 27, Market Street, Johannesburg; capital, £1,500.

The South African Breeders' and Importers' Association, Ltd., 96, Stock Exchange Buildings, Holland Street, Johannesburg; capital, £1,500.

African Board of Investors, Ltd., 16 and 18, Gold Fields, Loveday Street, Johannesburg; capital, £10,000.

The Denver Timber Mills, Ltd., The Denver Timber Mills, Main Reef Road, Denver, Johannesburg; capital, £10,000.

The National Industrial Corporation of Africa, Ltd., 5, National Bank Buildings, Simmonds Street, Johannesburg; capital, £500,000.

The Springs Auction and Estate Co., Ltd., Old Standard Bank Buildings, 63, Commissioner Street, Johannesburg; capital, £2,000.

D'Arcy Engineering Co., Ltd., 7, Standard Bank Chambers, Commissioner Street, Johannesburg; capital, £12,000.

Emmena, Ltd., 122, Prinsloo Street, Pretoria; capital, £1,000.

Lalparya, Ltd., 310, Church Street, Pretoria; capital, £100.

Kaboodar, Ltd., 310, Church Street, Pretoria; capital, £100.

Professor Abraham, Ltd., 310, Church Street, Pretoria; capital, £100.

Bhambhany, Ltd., 310, Church Street, Pretoria; capital, £190.

The Industrial Trunk Factory, Ltd., 22, Bezuidenhout Street, Johannesburg; capital, £2,500.

Emblem Investment Co., Ltd., 1, Pritchard Street, Johannesburg; capital, £2,000.

Cassim Hajee Joona, Ltd., 51, Market Square, Pietersburg; capital, £500.

Hoon and Raymond, Ltd., 4, 5, and 6, Henwood's Arcade, President Street, Johannesburg; capital, £3,000.

Mayel and Laher, Ltd., 226, Market Street, Johannesburg; capital, £2,100.

Bawa, Ltd., 158, Prinsloo Street, Pretoria; capital, £100.

Moonda, Ltd., 310, Church Street, Pretoria; capital, £200.

Sooria, Ltd., 312, Church Street, Pretoria; capital, £200.

Osman, Ltd., 310, Church Street, Pretoria; capital, £100.

Dawood Chothia, Ltd., 10, Diagonal Street, Johannesburg; capital, £400.

Bengadeewalla, Ltd., 312, Church Street, Pretoria; capital, £200.

Ebrahim Nassain, Ltd., 257, Seventh Street, Rietfontein East, Pretoria; capital, £1,000.

The Natal Picture Framing Co., Ltd., 53, Commissioner Street, Johannesburg; capital, £3,000.

Sujee, Ltd., 134, Seventh Street, Rietfontein East, Pretoria; capital, £500.

Samrod, Ltd., 490, Boom Street, Pretoria; capital, £500.

Adam Raja, Ltd., 167, Market Street, Johannesburg; capital, £525.

Hunter and Watkins, Ltd., 3 and 5, Rand Club Buildings, Loveday Street, Johannesburg; capital, £3,000.

The South African Poultry Review, Ltd., 15, Murray Street, Brooklyn, Pretoria; capital, £1,000.

Midas Estate and Mining Co., Ltd., 49, Meischke's Buildings, Harrison Street, Johannesburg; capital, £5,000.

Sellers, Ltd., corner Rissik and Marshall Streets, 106, Marshall Street, Johannesburg; capital, £1,000.

Baillie and Martin, Ltd., 58, Woburn Avenue, Benoni; capital, £7,500.

Patel Ismail, Ltd., 53, Struben Street, Pretoria; capital, £500.

Castle Mineral Water and Ice Works, Ltd., 152, Albert Street, City and Suburban Johannesburg; capital, £4,000.

Ganis Stores, Ltd., 158, Prinsloo Street, Pretoria; capital, £100.

Mockaria, Ltd., 236, Prinsloo Street, Pretoria; capital, £250.

Campbell and Thistleton, Ltd., 29-32, Natal Bank Chambers, Market Street, Johannesburg; capital, £8,000.

Patel Brothers, Ltd., 5, Bell's Buildings, corner Main and Harrison Streets, Johannesburg; capital, £1,000.

S. I. Patel and Co., Ltd., 5, Bell's Buildings, corner Main and Harrison Streets, Johannesburg; capital, £200.

Southern Rand Syndicate, Ltd., 44, Permanent Buildings, Harrison Street, Johannesburg; capital, £5,000.

Canoo, Ltd., 11, Kort Street, Johannesburg; capital, £500.

Wing Lee, Limited, 63, Commissioner Street, Johannesburg; capital, £800.

The Indian Ocean Shipping and General Agency, Limited, 37-39, Exploration Buildings, Commissioner Street, Johannesburg; capital, £8,000.

The Central African Exploration and Development Syndicate, Limited, 117-118, Cullinan Buildings, Main and Simmonds Streets, Johannesburg; capital, £2,000.

Moosa and Son, Limited, Joubert Street, Pietersburg; capital, £500.

Mawda and Brother, Limited, 348, Proes Street, Pretoria; capital, £100.

Kaba Keshavjee and Sons, Limited, Kruger Street, Louis Trichardt; capital, £200.

The Alkali Exploration Syndicate, Limited, 4, Norwich Union Buildings, Fox Street, Johannesburg; capital, £2,500.

Clyde Trading Company, Limited, Howard Buildings, Main Street, Johannesburg; capital, £5,000.

FOREIGN COMPANIES.

East Transvaal Tins, Limited, c/o James Hobbs, 4, Green's Buildings, Commissioner Street, Johannesburg; capital, £15,000.

South African Aerial Transports, Limited, c/o Thomas David Bamber, 25-29, Exploration Buildings, Fox Street, Johannesburg; capital, £100,000.

Arthur Balfour and Co. (Africa), Limited, c/o R. Baird Langdon, 60-63, National Bank Buildings, Simmonds Street, Johannesburg; capital, £5,000.

New Van Ryn Mines and Estates, Limited, c/o Thomas David Bamber, 25-29, Exploration Buildings, Fox Street, Johannesburg; capital, £60,000.

ALTERATIONS AND ADDITIONS TO FOREIGN COMPANIES.

Southern Van Ryn Reef Gold Mining Company, Limited, Johannesburg.

Texas Company (South Africa), Limited.

SPECIAL AND EXTRAORDINARY RESOLUTIONS.

Co-operative Exchange Yard, Limited, Johannesburg; alteration of objects.

Silcock and Verseput, Limited, Johannesburg; change of name.

Small Estates, Limited, Johannesburg; destruction of books.

Cape Ham and Bacon Company, Limited, Johannesburg; alteration of articles.

Pyramids Trading Company, Limited, Pretoria; increase of capital.

Pretoria Iron Mines, Limited, Pretoria; conversion into public company.

Orion Diamond Mining Company, Limited, Johannesburg; conversion into public company.

East Rand Trading Company, Limited, Johannesburg; loan.

White Limes, Limited, Johannesburg; alteration of articles.

Stavoren Tin Mining Company, Limited, Pietersburg; power of directors.

Hupp Garages, Limited, Pretoria; alteration of articles.

L. Fatti and Company, Limited, Johannesburg; alteration of articles.

Friedmann and Foy, Limited, Johannesburg; bond.

Aryan, Limited, Johannesburg; alteration of articles.

Sullivan Conservatorium of Music (Far East), Limited, Pretoria; conversion into public company.

Burnetts, Limited, Pretoria; destruction of books.

PROSPECTUSES.

The Union Mica and Corundum Mines, Limited, Johannesburg.

Deep Water Diamonds, Limited, Johannesburg.

Solomon Syndicate, Limited, Johannesburg.

NOTICE OF CHANGE OF NAME.

Silcock and Verseput, Limited, Johannesburg, to African Shipping, Limited.

NOTICES OF INCREASE AND DECREASE OF CAPITAL.

Standard Salt Co., Ltd., Johannesburg; increased £3,000 to £5,000.

East Champ d'Or Gold Mining Co., Ltd., Johannesburg; increased £6,000 to £12,000.

Premier Chicory Co., Ltd., Johannesburg; increased £1,500 to £3,000.

George Stott and Co., Ltd., Johannesburg; increased £6,000 to £10,000.

Silcock and Verseput, Ltd., Johannesburg; increased £5,000 to £15,000.

The Denver Timber and Sawmills, Ltd., Johannesburg; increased £3,000 to £10,000.

Orion Diamond Mining Co., Ltd., Johannesburg; increased £2,500 to £10,000.

Christopher and Shillito, Ltd., Johannesburg; reduced £25,000 to £15,000.

Ullmann Bros., Ltd., Johannesburg; increased £5,000 to £10,000.

Hupp Garages, Ltd., Pretoria; increased £50,000 to £100,000.

Cape Ham and Bacon Co., Ltd., Johannesburg; increased £1,500 to £3,000.

The Pretoria Iron Mines, Ltd., Pretoria; increased £50,000 to £75,000.

Martins, Ltd., Johannesburg; increased £1,000 to £6,000.

Harry Forlezer, Ltd., Johannesburg; increased £500 to £3,500.

Pyramids Trading Co., Ltd., Pretoria; increased £6,000 to £10,000.

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Notes and News.

French Rand Redivivus.

We understand that Mr. Jas. Humphries has started milling on his claims formerly belonging to the French Rand.

* * * *

Roberts Victor Diamonds.

At this property the foundations at the new site to which the plant is being removed in order to re-treat tailings are now complete and washing will commence in a few weeks' time. In view of the satisfactory state of the diamond market and the general position at this property there would appear to be a likelihood of the mine being re-opened in the near future.

* * * *

De Beers Dividends.

The directors of De Beers Consolidated Mines, Ltd., have declared a final dividend of 10s. per share, less dividend tax of 7½ per cent., for the year ending 30th June, 1919, to preference shareholders at that date. They have also declared a final dividend of £1 10s. per share, free of dividend tax, for the year ending 30th June, 1919, to deferred shareholders at that date.

* * * *

New Compound Diamonds.

The secretary of this company has issued a statement to the daily Press to the effect that a new extension of yellow ground has been found at a depth of 40 feet and distant about 200 feet east of the old central workings. The report furthermore states "the recovery from each day's wash continues high," but the public are not enlightened as to what the directors of the company consider a high recovery to be.

* * * *

Explosives Trades.

It is announced by the directors of Explosives Trades, the big combination of explosives manufacturers formed in November last, with an authorised capital of £18,000,000, that particulars of the approximate earnings of the subsidiary companies for 1918 have been received, and they have decided to write off the whole of the preliminary expenses and to make a distribution, payable at the end of June, of 9s. on the ordinary shares, or 45 per cent. in respect of the dividends receivable for the year to December 31, 1918.

* * * *

Zaaipiaats Tin.

The directors of the Zaaipiaats Tin Mining Co., Ltd., make the following statement: Development at the mine has recently shown a serious falling off in the values of the ore bodies in No. 13 section, but No. 3 branch in this section has linked up the main face and the combined bodies are of considerable size, containing typical pipe matter; but very low tin values. It is impossible to say how long the values will remain low. Previous experience has shown that the occurrence of impurities is local and often will disappear rapidly, tin ore again becoming prominent. There appears to be no reason why a similar change should not take place in this instance. Development is being pushed ahead with all possible speed.

* * * *

May Mining Returns.

The mineral output of the Union in May was valued at £4,273,531, an increase on the April return of £193,247. The diamond output was 232,347 carats, valued at £837,822, the increase being 9,282 carats, and in money £37,877. The coal output was 869,491 tons, the pit's mouth value of which was £288,768, the increase being 31,835 tons, and in value £9,069. The Transvaal's output was 559,566 tons, an increase of 14,485; the Cape produced 119 tons, an increase of 36 tons; Free State, 77,511 tons, an increase of 9,125; and Natal 236,995 tons, an increase of 8,189. The Transvaal shipped 213 tons of tin, the value of which was £39,915. Throughout the Union 33,192 whites and 261,368 coloureds were engaged in mining during May, the former being an increase of 750, and the latter of 1,600.

New State Areas Dispute and Arbitration.

We understand that the dispute between the management and men at the New State Areas has been left to arbitration, the men meanwhile resuming work.

* * * *

Presentation to Mr. D. C. Greig.

The members of the Johannesburg Stock Exchange and its staff paid tribute this week to the administration of Mr. D. C. Greig, who recently resigned the position of Chairman, which he had held for eight years. From members the presentation was made of a silver salver, suitably inscribed, and a gold watch and chain; while from the staff Mr. Greig received a silver inkstand and tray, with blotter. The presentations were made by Mr. Manisty, the new Chairman, in a happy little speech, and Mr. Greig in his reply dealt with many of the problems now confronting the financial and industrial community.

* * * *

The Low-Grade Mines Commission.

It is notified that His Excellency the Governor-General has been pleased to appoint a Commission to inquire into and report upon the following matters: (1) The position of the gold mines of the Witwatersrand now working at a loss, and of those working at small and diminishing profit; (2) the effect the closing down of such mines would have generally and especially in regard to unemployment; (3) what steps can be taken by the Government—(a) to obviate the closing down of any or all of these mines, (b) to alleviate the position which will be created by the closing down of any such mines; (4) the position in the mining industry of the native and coloured workmen; (5) the more efficient utilization of the native labour force available. And further to appoint the following gentlemen to be members of the Commission: Sir Robert Nelson Kotzé, Kt. (chairman), Sir Evelyn Wallers, K.B.E., William Gemmill, F.I.A., Johannes Gerhardus van der Horst, Archibald Crawford, James Forrester Brown, Bouwer Pohl, William Thomson Welsh, with Anton Cornelius van der Horst as secretary. And to confer upon the said Commissioners the powers, jurisdiction, and privileges described in Ordinance No. 30 of 1902 of the Transvaal.

* * * *

Rezende.

The report of Rezende Mines, Ltd., to 31st December last states that the total issued capital at 31st December was £118,435, but there was a liability to allot as fully paid the 1,565 reserve shares as part consideration for the acquisition of an option to purchase the Kent mine. These shares have since been allotted and issued, making the authorised and issued capital of the company £120,000. The property consists of 590 mining claims and three farms, including the Queen's extension block of seven claims purchased during the year. Working expenditure and revenue account shows a profit of £48,558, and after deducting London office expenses £1,360, Salisbury office expenses £2,199, influenza epidemic expenses £969, depreciation £2,966, directors' fees £820, providing a reserve of £200 to meet the Rhodesian income tax, after crediting royalty, interest and transfer fees, there is a credit balance of £41,561. An interim dividend of 10 per cent., equal to 2s. per share, has been paid in respect of the year, which, together with the directors' additional remuneration, absorbed £12,436, leaving £71,671 at credit of appropriation account. In addition to the recovery shown in working expenditure and revenue account bullion to the value of £25,223 was realised, the proceeds going to a bullion reserve account. The ore reserves are estimated at 447,690 tons, as compared with 408,257 tons. The directors recommend a final dividend of 10 per cent., making 20 per cent. for the year. The consulting engineers report that development operations were considerably hampered, due in the first instance to the abnormal amount of water cut in the main headings, and later on to the havoc

caused by the outbreak of influenza. The ore reserves total 175,374 tons, valued at 12.66 dwts., as compared with 135,941 tons, valued at 11.77 dwts. In regard to the future of the mine, everything depends upon the pushing forward of development, the importance of which is illustrated by taking the history of the mine for the past three years. The gold exposed in the mine (using unreduced values) was estimated as follows:—End of 1916, value £110,000; end of 1917, value £460,000; end of 1918, £662,000. It will be seen that in two years the value of the mine has increased sixfold. Provided no unforeseen circumstances arise, the current year should be a record one for the mine, and the important development points now being attacked have every possibility of increasing the value of the proposition.

* * * *

Namaqua Copper.

Smelting had to be suspended altogether at the end of May last by the Namaqua Copper Company in consequence of the Imperial Government having stopped the shipments of unrefined copper to Great Britain. The directors' report for 1918 states that since the middle of last year operations have been confined to development work, to the production of copper by precipitation, and to certain other work necessary to maintain the plant in good order. The accounts show a loss for the year of £6,670. The ore reserves at the end of 1918 were estimated to represent 2,189 tons fine copper, or 179 tons less than the previous estimate. The directors add that there is no immediate prospect of being able to resume work at a profit. The last dividend was 25 per cent. for 1916.

* * * *

Mashonaland Consolidated: South-East Rand Interests.

The secretary of Mashonaland Consolidated (1912), Ltd., states in a circular with regard to the future policy of the board, that the objects to be attained by the additional capital, which received unanimous approval at the recent general meetings, were not only to enlarge operations in connection with the present assets, but to entertain new business. With regard to new ventures, through Mr. S. S. Kennedy the company has been offered a one-half interest in the sole right of prospecting and purchasing the gold-mining rights appertaining to the farm Rietvalei No. 186, in the South-East Rand. The immediate neighbours comprise the East Rand Mining Estates, the Union Corporation (late A. Goerz & Co., Ltd.), the Spaarwater Mines (Messrs. Barnato Brothers and Sir Abe Bailey), the Oceana Development and New Albion companies. The main line of railway from Johannesburg to Heidelberg and Natal traverses the farm, upon which a station has been located. The total area of the property is 4,677 morgen 301 square roods. The number of claims accruing under the Gold Law would be approximately 1,332, excluding discoverers' claims, which latter would probably bring the total mynpacht area up to 1,500 claims. The ultimate mining company would be further entitled, without payment to the owner, to lease from the Government a large area, possibly 1,000 claims, on a profit-sharing basis, as has recently been done by the Daggafontein Mines. The right to purchase extends to February 28, 1922. Upon the exercise of the option to purchase the price of the gold mining rights is fixed at £150 per claim area obtainable under the Gold Law. The average expense of bringing a deep mine to the producing stage does not exceed £500 per claim area, whilst the ultimate value obtained, based on that of the chief producing mines of the Far East Rand, approximates to £10,000 per claim area. It will thus be apparent that the prospects of dealing with this property upon terms which should realise a large profit to the company are extremely promising. The developments now proceeding in the immediate vicinity include shaft sinking on Spaarwater and boring on Bendracht, the work in both instances being undertaken to cut the Van Ryn Reef. According to Mr. W. E. Bleloch, who has done so much in aid of the development of this district, the Main Reef series likewise underlies Rietvalei. The directors propose to accept the offer, subject to a favourable report by a competent engineer, and have received from the largest shareholders their approval of this course.

Stoping at West Rand Consolidated.

Of the 432,083 tons of ore mined last year at the West Rand Consolidated mine, 342,899 tons were obtained by stoping and the remainder by reclamation and development work. Of the ore stoped rather more than half was obtained by means of reciprocating and hammer drills. The average number of machines used in the stopes was as follows: Large reciprocating machines, 19.03 per cent.; small reciprocating machines, 16.04 per cent.; hammer drills, 14.74 per cent.; total, 49.81 per cent. On the Main Reef series the western section of the mine has been the principal producer of ore for the mill. The conditions as regards stoping in this section have changed considerably during the past year, the reef width becoming narrow and the false hanging more friable, with the result that it is no longer possible to work reciprocating machines without breaking a large quantity of waste rock. To meet the changing conditions it was decided to instal a light type of hammer drill, with which it is possible to mine the reef over a narrow width. The manager of this mine, Mr. G. D. Stephen, also records in his annual report an increase in the stoping width in the Battery Reef section, and states that this is due to the discovery that the payable values are not limited to the narrow band of banket containing rounded pyrites, but that in certain portions of the mine further horizons of payability exist. The work of identifying and testing the various horizons is proceeding, and it seems likely (he writes) that when the detailed correlation has been completed it will render possible a more economical method of development, and will add appreciably to the known ore contents of the areas already developed.

* * * *

Rhodesia Gold Mining and Investment.

The profit and loss account for 1918 of the Rhodesia Gold Mining and Investment Company shows a net profit of £12,507, which, with the balance of £42,906 brought forward, gives a total of £55,413 to be carried forward. The balance sheet at 31st December, 1918, shows the following shares held in other companies:—27,861 Lonely Reef, 43,000 Cam and Motor, 13,471 Hay, 4,500 United Rhodesia Goldfields, 179,896 Sabi Gold Mining Company (of which 130,000 shares have yet to be allotted against transfer of properties). The auditors in their report remark:—"No provision has been made for depreciation on the value of shares in other companies which stand in the balance sheet at cost, or for depreciation of machinery, plant, buildings, etc."

* * * *

Changes at the Lonely Reef Mine.

At the Lonely Reef Mine, Rhodesia, special care has to be given to the driving of the lower levels owing to the extensive crushing of the footwall rock under the reef. Mr. C. B. Kingston, the company's consulting engineer, writes that this crushing material yields to the heavy rock pressure at these deep levels, and breaks away in a dangerous manner unless special precautions are taken to prevent its doing so. This same physical condition has imposed upon the management a change in the method of stoping. The difficulty has been met by removing the crushed footwall rock before breaking the reef, and using it for stope filling. By keeping the stopes packed close up to the working face the area exposed at any moment is reduced to a minimum, with a corresponding reduction in the risk of accident. This extensive crushing of the footwall is characteristic of the whole area below the 13th level, within which the large body of rich ore has been developed. The rock movement that crushed and ground up the footwall of the fissure also produced conditions favourable to ore deposition. A change has also been made in the method of calculating the ore reserve. This has been made possible by the altered method of stoping. In 1917 the reserve was calculated on a basis of reef width plus 24 inches of waste, this being found to represent as closely as possible the milling grade of the mine. The management has now reverted to the earlier custom of calculating the reserve on a basis of reef width plus 12 inches of waste, this being considered to represent more accurately the milling grade of the ore under present conditions.

TOPICS OF THE WEEK.**THE OUTLOOK FOR THE GENERAL MINING SUBSIDIARIES.**

THE annual meetings of the subsidiary companies of the Albu group were held last week, and full reports of the speeches from the chair will be found in this issue. Sir George Albu took the opportunity to point the moral of the recent warnings addressed to the Government by the official head of the industry, by showing how its recent taxation and lack of sympathy had affected each of the mines of the group in turn. At the meeting of the Meyer and Charlton, which remains the show mine of the group, Sir George entered a strong protest against the anomalous Provincial Council taxation, which so directly affects the returns to shareholders. "One would think," he said, "that, even if the public as a whole was ignorant of the extreme seriousness of the outlook of the mining industry, the Government, which has all along been fully advised, would have had sufficient foresight and common sense to prevent these excessive burdens being placed on us, and, if necessary, to have educated the House of Assembly on the question of the extreme unwisdom of crippling an industry already struggling with adversity and yet, at the same time, the greatest contributor, directly and indirectly, to the revenues of the State." Regarding the Aurora West, Sir George pointed out that the returns for the year gave a practical illustration of the difficulties with which the lower-grade mines had had to contend during the last two years of the war, and which, unfortunately, were still in front of them. "In the case of this company," said Sir George, "as, unfortunately, in the instance of many others along the Reef, the mine has been for the past year, and is at the present time, being run without any benefit to shareholders, but with substantial benefit to the employees and the community. There must, however, be a limit to this procedure, and the limit in our case will be reached if and when we find we have no reasonable prospect of reaching and maintaining profit-earning conditions. I trust that it will be some years hence before we are obliged to arrive at such a conclusion; but I am bound to sound a warning note that it may equally well be in the very near future. Much depends upon the results of the mining and development operations during the next six months." Equally serious is the position revealed in regard to the Roodepoort United and the New Goch. At the Roodepoort United the chairman said: "The position is critical—with this increased taxation and the unsympathetic attitude of the Government generally, even more critical than when the chairman addressed shareholders at the last annual meeting, and while they were more than anxious to continue operations until brighter days come, it may be found, unless relief in some direction is forthcoming in the near future, that before the next annual meeting a suspension of operations may have been forced upon the company." In the course of his speech at the New Goch meeting, Sir George Albu said that by actively continuing development in the area leased from the City Deep it could be fairly well tested by the end of the year, and the chances of returning to a moderate profit-earning basis would be increased. But the new Miners' Phthisis Act threatened to be the last straw to remove all hope of reverting to profitable conditions. The Board had seriously to consider the suspension of underground operations in the near future. By so doing they would avoid running into debt. But the step would only be taken with utmost reluctance, as it would increase unemployment and leave the lease area unproved. Under present conditions and with added burdens, and in view of the relatively small cash resources, the course seemed almost inevitable. These stubborn facts adduced by Sir George Albu afford eloquent confirmation of all that has lately been put forward on behalf of the low-grade mines of the Rand. They are vouched for by the actual returns of the mines referred to, and they present a combined and tangible object-lesson that the Government and the country cannot any longer ignore.

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THE FAR WEST RAND.

A Revival of Interest—American Capital Available for "Pullinger's"—Gemsbokfontein Shaft to be Re-opened—Activity in the Dolomites—The Cementation Process—Very High Borehole Values—The Rich West Rand Leader—Favourable Expert Opinion—Prospects at Middlevlei—"Pullinger's" Immense Assets—Holdings and Finance Discussed—The Prospect of a New Gold Field.

(Special to the "South African Mining and Engineering Journal.")

ARE we to witness the development of a Far West Rand within the next few years, just as we have seen the Far East Rand area which a dozen years ago was considered to be a region of nebulous possibilities rise to heights of extraordinary prosperity during the period of the great war? Present indications point to at least a reasonable likelihood of such a consummation in the future. Development work at Randfontein has disclosed distinctly better results during the past few months, and the day is not far distant when that great proposition will be producing gold on a much larger scale than it has done so far. Moreover, there are vast areas lying to the south and south-west of Randfontein which are known to be auriferous and in some localities highly payable. During the past few years these sections of the Witwatersrand have sunk into industrial oblivion, but the gold is undoubtedly there and we foresee in the not far distant future a new chain of mines extending southwards and westwards from Randfontein—the Far West Rand of the coming years which may well enthuse new life into the whole Transvaal gold mining industry.

AN IMPORTANT ANNOUNCEMENT.

In our last issue we referred briefly to the revival of the Western Rand Estates property under the strong ægis of American capital as represented by one of the largest and most powerful mining and financial companies in the United States. Nothing official has as yet been announced on this side as to the re-opening of the property, and in some quarters the announcement may be regarded as premature, but we have good reason for believing that our information is wholly correct, that within the next year or two the Gemsbokfontein shaft will be put down to the reef horizon, that other shafts will be sunk on this company's vast area, and an ambitious policy of exploitation will be adopted. Such activity is fully warranted by the geological evidence of experts and the results secured in boreholes put down some years ago to test the formation underlying the dolomites which covers a considerable portion of this area.

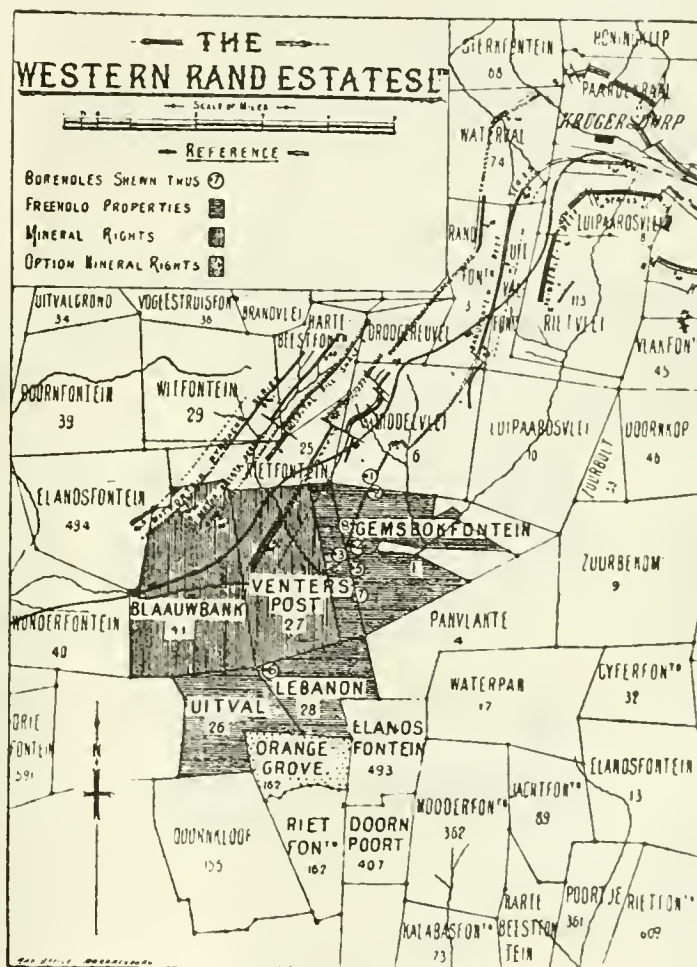
A FORGOTTEN VENTURE.

"Pullingers," as Western Rand Estates are generally known, were a very popular stock some years ago, and in 1903 the shares which at that time had a nominal value of 5s. were quoted at £4½, and when one considers the enormous assets of the company and the excellent values secured in the boreholes and the small capital of the company it is not to be wondered at that the shares appreciated to seventeen times their par value. Latterly, however, this portion of the Witwatersrand has engaged exceedingly little attention and it may at the outset be well to refresh the public memory in regard to this proposition and the results secured thereon.

WHAT "PULLINGERS" ESTABLISHED

The company was registered in April, 1902, with a capital of £135,000, in 540,000 shares of 5s. each, all issued and fully paid: 232,000 shares for the property, 200,000 at par, 81,000 at 20s. per share; 27,000 price 30s. per share. The property was as follows: Rights over area south-west of the Randfontein Estates. The company acquired the unencumbered freehold, including the mining rights, of—Six portions of farm Gemsbokfontein No. 1; one-fourth of farm Venterspost No. 27; whole of farm Libanon No. 28; whole of farm Uitval No. 26; undivided half of farm Blaauw-

bank No. 41; and the mining rights over—whole of farm Blaauwbank No. 41, two portions of the farm Venterspost No. 27. This last right being in addition to the freehold portion before referred to, gives the company the mining rights over the whole farm Venterspost No. 27. These properties, upon which the company have nothing further to pay, give it the mining rights of over 21,000 morgen, or say 45,000 acres, of which 26,000 acres are freehold. In addition to the properties mentioned, the company acquired a share in the mining rights on Orange Grove, passed to the Orange Grove Estates, Ltd. The company's area and its position in respect of the Randfontein group will best be



gathered from the map that accompanies this article. Not the least important point in the map is the relative positions of the bores, indicated by the numbers in circles. The marks to show reef strike are the indications of the experts of the company. They are mainly derived from an exhaustive report made late in 1899 by Dr. Carrick. Dr. Carrick's elaborate geological map and his deductions were submitted to Dr. F. H. Hatch, and both authorities were of the opinion Dr. Hatch pronounced in June, 1902: (1) That the Main Reef series is cut off by a great upthrow fault at Witpoortje. (2) That the Botha's and Main Reef series are identical. (3) That the Botha's and Randfontein series are identical. (4) That a fragment of the Randfontein or Main Reef series is to be found on Middelvlei. (5) That the extension of the Main Reef series is to be looked for (below the dolomite

formation) in the properties of the Western Rand Estates (Venterspost and Gembokfontein). Such were the opinions held at the time of formation of the Western Rand Estates, Ltd., and work done since by bores has confirmed the experts' views. Thus at a meeting of the company on August 20, 1903, the chairman reported that Bore 4, situated on the western side of Gembokfontein, the "Western Rand" Leader, 10½ inches wide, was struck during March, 1903, at a depth of 1,972 feet 5 inches, and assayed 7 ozs. 16 dwts. At a depth of 2,219 feet the west reef was struck 33½ inches wide; the footwall of 5 inches assayed 9½ dwts. Various other reefs were encountered in the core, but showed low assay values. Bore 5 encountered a reef 27 inches wide, similar to the Randfontein West Reef, at 2,009 feet, the footwall portion of 5 inches assaying 11 dwts. As in No. 4, numerous other reefs were intersected. The formation passed through in bore No. 5 was as follows: Surface to 1,230 feet, dolomite; 1,230 feet to 1,706 feet, diabase; 1,706 feet to 2,972 feet, Witwatersrand sandstone, quartzite, and conglomerate beds, including the West Reef struck, as above mentioned, at 2,009 feet. The underlying shale bed was encountered at 2,972 feet, and the hole ended in shale at 3,112 feet. Bore 8: Late in 1903 the company commenced borehole No. 8 on farm Gembokfontein (2,000 feet in a northerly direction from the No. 4 bore, with a view to intersecting the leader proved in the No. 4 bore). On March 1, 1904, the reef was intersected at a depth of 1,675 ft., the reef, 11 inches, showing by first cabled advice "good gold," and by later advice about 19 dwts. over 15½ inches. As to borehole No. 7, in November, 1904, it was reported that the reef struck at 3,188 feet, 5 inches of which assayed 1 oz. 15 dwts. and 4 inches 7½ dwts., giving an average of about 23 dwts. over 9 inches.

WHAT THE BOREHOLES PROVED.

An official summary of what the boreholes show is given herewith. It will be noted that as with the Randfontein group of companies, so in this Western Rand proposition, there is evidence of the existence of a double reef—what is termed the Randfontein Leader and the West Reef. With this explanation the following official schedule of boreholes will be better understood:—

Bore-hole	Western Rand Leader.			No. 2 West Reef.		
	Depth. Feet.	Width. Inches.	Values. Dwt.	Depth. Feet.	Width. Inches.	Values. Dwt.
No. 2	—	—	—	2,415	29.0	5.20
No. 4	1,972	10.5	158.00	2,473	9.0	6.58
No. 5	—	—	—	2,303	15.5	2.51
No. 7	—	—	—	3,188	9.0	22.74
				3,190	15.5	4.00
No. 8	1,677	15.5	18.83	2,004	15.0	6.00
No. 9	2,302	8.0	6.60	3,227	5.0	12.75
				3,229	7.5	11.23

It will be clear from the foregoing that the evidence of these boreholes pointed to the existence of a rich reef underlying the dolomites, and although boreholes cannot be regarded as giving very reliable information as to reef widths and values, it must be admitted that there are reasons for believing that the "Pullinger" properties possess very considerable productive and profit-earning potentialities.

THE DOLOMITES.

A shaft was subsequently sunk on Gembokfontein, but operations were suspended in February, 1911, when the shaft had reached a depth of 97 feet, owing to exhaustion of working capital. This shaft met with considerable difficulties in connection with water, sinking having to be conducted through aqueous dolomite measures. In connection with this aspect of the proposition it should, however, be borne in mind that these water difficulties are not likely to be encountered in depth. The report of the manager, Mr. J. Howard Sellers, dated December 1st, 1903, stated: "As will be seen from the results of the boreholes, a sheet of dolomitic limestone, approximately 1,000 feet in thickness, will have to be sunk through before reaching the reef horizon

in all cases. The upper 200 or 300 feet only of this limestone sheet have proved to be cavernous and fissured, and it is in such caverns and fissures that water exists, and not until the surface and sub-surface soil to the depth of approximately 150 feet have been sunk through is water encountered at all." It should also be borne in mind that the adoption of the cementation, or Francois, process at Daggafontein and elsewhere on the Far East Rand has been attended with most satisfactory results, and there can be no doubt that there are no shaft sinking obstacles which cannot now be overcome at Gembokfontein.

REVIVAL OF INTEREST.

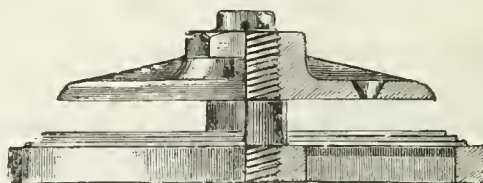
Since the suspension of operations in this shaft "Pullingers" have largely sunk into obscurity, in common with the Far West Rand as a whole. We learn, however, that arrangements have recently been discussed in America for the raising of ample capital to re-open the property, and it is well within the bounds of possibility that the Far West Rand will become a field of great activity in the not far distant future.

PRESENT ASSETS AND FINANCES.

The Western Rand Estates Company now holds the following properties:—Freeholds: Gembokfontein No. 1, 3,890 morgen; Venterspost No. 27, 1,274 morgen; Uitval No. 26, 2,300 morgen; Libanon No. 28, 2,140 morgen; Blaauwbank No. 672, 2,784 morgen. Mineral rights: Venterspost No. 27, 3,890 morgen; Blaauwbank No. 41, 5,000 morgen—a total area of 21,279 morgen, equivalent to 45,038 English acres in freehold and mineral rights. In 1906, a half interest in mineral rights of adjoining farm Orange Grove No. 162 was sold to the Orange Grove Estates, Ltd., in which this company holds about five-twelfths of the shares. The capital is £202,500, in 405,000 shares of

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10s. each; all the shares are issued and fully paid. Originally £108,000 in 5s. shares, it was increased to £135,000 in April, 1902, Mr. D. J. Pullinger subscribing for 81,000 at 15s. premium and 27,000 at 25s. premium. In June, 1909, the shares were consolidated into 10s. shares, shareholders receiving one new for every two old shares, and the capital increased to £202,500 by the creation of 135,000 shares of 10s. each; the new shares were offered to shareholders at 20s. each *pro rata*, the issue being guaranteed. As to accounts, for the year ended June 30, 1918, submitted in Johannesburg on October 28, 1918, these showed sundry expenditure to date (less receipts), £126,132; properties, plant, shaft sinking, etc., £271,731; cash £33, stores £5,192, debtors £21; creditors £41,988, contingent liabilities £427. Share premium account, £158,625. It is understood that the company also possesses a considerable amount of money in London.

MIDDELVLEI'S PROSPECTS.

In view of the probability of this proposition being re-opened in the near future and of an increased measure of attention being directed to the West Rand as a whole, the position of the Middelvlei Estate and G.M. Co.—another concern which has lapsed into obscurity during the past few years—invites attention. This property, which is a Consolidated Gold Fields subsidiary, consists of a freehold portion, in extent 964 morgen (say 1,900 acres), of the farm Middelvlei, district Krugersdorp. This area includes 132 morgen of mynpatch areas. The value of the property depends on the extension of the Randfontein series of reefs through this farm, which, according to expert evidence, contains at least a portion of the same reef encountered in the Western Rand Estates areas. Prospecting operations were intermittently carried on years ago, but up to suspension of operations prior to the Boer War the position of the reefs had not been determined. In the report of the directors issued in

April, 1899, it was stated two boreholes had been put down to a depth of 602 feet 2 inches and 376 feet 6 inches respectively, and a considerable amount of surface prospecting done, but "no reliable indication was afforded as to the position of the extension of the Randfontein series." Shortly before the outbreak of war in 1899, negotiations were entered into with neighbouring owners with a view to putting down a joint borehole, but, owing to the conditions then prevailing, nothing definite could be arranged. The issued capital of the Middelvlei Company is only £169,915, and the last balance sheet, published in August, 1918, stated that during the year the revenue exceeded the expenditure by the sum of £157 5s. 7d., and this amount has been deducted from the balance at debit of income and expenditure account at 30th June, 1917, leaving the debit balance on that account at 30th June, 1918, at £22,841 0s. 6d. Cash on fixed deposit amounted to £11,100, and the interest received and accrued from this source during the period was £171 11s. 3d.

A NEW AND GREAT GOLDFIELD.

In conclusion, we would remark that the announcement which we are here able to make regarding the revival of interest in the Far West Rand may have a most important influence on the gold mining industry of the Witwatersrand as a whole, particularly so in view of the fact that there is very strong financial backing behind the movement.

Koodoo Diamonds.

The secretary of the Koodoo Diamond Mining Syndicate, Ltd., writes:—I am instructed by my Board to state that they have received a wire from their mine manager reading: "Washed seven loads on Friday and found seventeen diamonds, including one of four carats." Continuous washing operations have now commenced.

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CROWN DIAMONDS.

Test Wash of the New Blue to Commence in the Middle of this Month—A Representative Dump of New Ground Floored—Development Progressing in Good Blue—Prospects Encouraging—Capacity of the Plant—Past Results Reviewed.

THE long-anticipated wash of the new ground at the Crown Diamond Mines is expected to commence on the fourteenth of this month, that is on Monday week. The technical management of the company has adhered to its original policy of extending drives out to the walls of the mine at different points around the circumference of the pipe, so that the test washing may give representative results from the new area. At the moment of writing the drives have not reached the walls of the mine on all sides, but by the middle of this month Mr. Parsley, who is in charge of operations, expects to have a dump of ground thoroughly representative of the new blue. Needless to state, the results of this washing will be awaited with the keenest interest, for few mining ventures have engaged so much attention of late as "Crowns." Meanwhile development is proceeding in good blue ground of excellent appearance, the area of a "new" mine of considerable size has been established, and the prospects of the property are considered to be good.

ANTICIPATIONS AS TO RECOVERY.

This blue ground has favourably impressed old Kimberley men who have seen it. The ground is clean friable blue, showing plenty of "lively" mineralisation, and although one or two large boulders have been encountered it is clear that if appearances count for anything the company has a much more favourable proposition to deal with in depth than it has ever had in its nearer surface undertakings. It is, however, a true old adage that the proof of the pudding is in the eating thereof, and one moreover that has a singularly apt application to diamond mining. A wash is the only test of a diamondiferous proposition. A diamond mine does not lend itself to development sampling like a metalliferous concern, and for this reason the results of the test washing, which will take place in ten days' time, are being awaited by the public with the very keenest interest.

Judging from results secured in the old nearer surface area, some portions of the property are richer than others. In the pit sunk from the 140 ft. level above the existing south-west drive results of 14 to 16 carats per 100 loads were secured, and there is a perfectly reasonable disposition to expect that the results obtained in the new ground will at least be as good as those won from the old hardbank area. The technical advisers of the company advise, however, that there should be no selection from any particular area, but that a representative quantity of ground from all round the mine as defined by the existing drives should be tested.

THE WASHING EQUIPMENT.

The washing plant of the company consists of eight 14 ft. pans, each of a nominal capacity of 500 loads per day, with accessory conveyors, rock breakers and rolls, etc. Four of these pans were dismantled some time ago. The plant is based on the double treatment principle of washing and recovery, and it is not anticipated that more than 1,400 loads per day will be treated without straining the capacity of the equipment. The company possesses good steaming and electric lighting plant, with well-equipped fitting shops, and although the plant as a whole has been idle for some considerable time no great difficulty should be experienced in getting it into effective working commission again.

The previous operations of the Crown Diamond Mine were materially hampered by high transport charges. Until the construction of the Kroonstad-Klerksdorp railway, fuel and stores had to be transported from Kroonstad, a matter of 20 miles or more. The mine is now, however, only four and a half miles from Rustig station on the new line, and this is obviously a great advantage to the company.

Mr. Parsley fixes six shillings per load as an estimate of cost of mining and treatment. It seems to us that it should be possible to work the proposition at a lesser rate of expenditure, but it is commendable policy to err on the safe side in these matters. It should be borne in mind that the Crown Diamond property is secured under the old Free State title, and is not therefore liable to the heavy taxation on profits which the Premier for instance, amongst the new mines, has to pay the Government. Another favourable feature in connection with the present revival of activity at the property is the high price of diamonds obtaining at present and which it is confidently expected will be maintained for some considerable time to come.

Falls of Hanging at the Durban Deep.

The following cable has been despatched to the London office of the Durban Roodepoort Deep, Ltd.: "Directors regret report falls of hanging occurred June 23 in No. 1 shaft between 7th and 11th levels, seriously damaging shaft and necessitating stoppage winding. On consulting engineer's advice board has decided effectively repair shaft so as to ensure its continuous running in future. Probably one month's stoppage-milling entailed, involving loss about £30,000."

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THE YEAR WITH THE T.G.M.E.

Reduced Yield and Profits—Several Adverse Factors—Points from the Consulting Engineer's Report.

In his report on the operations of the T.G.M.E. for the year ended March 31st, 1919, Mr. E. H. Clifford, the consulting engineer, writes:—Hereunder is a table showing the important features of the year's work, as compared with the previous year: Tons milled, 1918 182,685, 1919 144,245; revenue, 1918 £336,438, 1919 £231,359; expenditure, 1918 £219,128, 1919 £196,546; profit, 1918 £117,310, 1919 £34,813; revenue per ton milled, 1918 36s. 10d., 1919 32s. 1d.; working costs per ton milled, 1918 24s., 1919 27s. 3d.; working profit per ton milled, 1918 12s. 10d., 1919 4s. 10d.; development footage, 1918 64,018, 1919 52,621; ore reserve—milling tons, 1918 517,531, 1919 530,614; ore reserve value—dwts. per ton, 1918 9.7, 1919 9.2; cost of prospecting—not included above, 1918 £14,750, 1919 £11,684. The profit shows a very marked falling off, due, as will be seen, to a decline in the tonnage, a decline in the revenue per ton milled, and an increase in the working costs per ton milled. Tonnage and costs were adversely affected by further increases in the price of labour and nearly

all materials, and also by a particularly severe visitation of the influenza epidemic which broke out in October. Attention is directed to the general manager's remarks on this subject, in which he points out that all work on the mine was brought to a standstill, and that we have not yet recovered from its effects. The revenue has declined to the extent of 4s. 9d. per ton, and the ore reserves are lower by $\frac{1}{2}$ dwt. The explanation of this is, the ore opened up during the year was for the most part low-grade, and very little rich ore has been added to the reserves. The tonnage reserve shows a small increase, and, in connection with this, it should be borne in mind that a large proportion of the ore milled comes from areas which are not included in the reserves, because the information concerning them is not sufficiently exact to justify this. A considerable amount of money was devoted to prospecting, which I regret to say was attended with unsatisfactory results. Details are set out in the general manager's report. From a prospecting point of view, the most encouraging looking place at the present moment is Vaalhoek.

PERSONAL.

Mr. Max Honnet has been appointed Assistant General Manager of the Central Mining and Investment Corporation, Ltd.

It is notified that His Excellency the Governor-General has been pleased to appoint Mr. Frank Gowyne Alfred Roberts as an additional member to the Low-Grade Mines Commission.

Captain Walter Albu, son of Sir George and Lady Albu, who has been serving with the Royal Air Force in Russia, has been awarded the Croix de Guerre and the Order of St. Stanislaus (Second Class).

In connection with the official peace celebrations, arrangements are being made with a view to having, as far as possible, a large bonfire on the highest dump on each mine in the Witwatersrand area.

The sudden death occurred recently of Mr. W. M. Phillpotts, the Rhodesian Inspector of Mines, who was a great-grandson of Bishop Phillpotts, of Exeter. A brother of the deceased was in command of the Warspite at the battle of Jutland. The late Mr. Phillpotts arrived in Rhodesia in 1909, after considerable mining experience in the United States and Alaska.

The Commercial Exchange was the scene of a most pleasing function last Monday, when Mr. H. R. Nethersole, M.B.E., was made the recipient of a handsome presentation on the occasion of his severing his connection with the Rand Mines, Ltd., for the purpose of joining the firm of Messrs. Allen, Wack & Co., and Sheppard, Ltd. The function was presided over by Mr. Adam J. Niven, who was supported by prominent commercial men, representing every phase of the town's commercial life.

At the annual meeting of the Chemical, Metallurgical and Mining Society, held at the School of Mines last Saturday night, Mr. H. S. Meyer presiding, the election of officials for the year was declared as follows: President, Mr. Jas. Gray; vice-presidents, Mr. A. Whitby, Mr. J. Chilton and Mr. G. A. Watermeyer; hon. treasurer, Mr. J. R. Thurlow; members of council, Messrs. H. R. Adam, R. A. Cooper, C. J. Gray, C. H. Greathead, H. C. Hilton, J. H. Johnson, A. King, J. J. R. Smythe, F. W. Watson, F. Wartenweiler, E. M. Weston and H. A. White.

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THE YEAR WITH THE ALBU GROUP.

Points from the Annual Reports—Profits, Ore Reserves and the Dormant Companies.

The annual reports of the Albu companies for 1918 appear in this issue. It will be seen that at the Meyer and Charlton during 1918 a lower tonnage of ore was crushed consequent on a considerable proportion of the ore mined having been temporarily utilised in supporting the underground workings. This, combined with a rise in working costs, and in spite of the still higher grade of the stuff treated, resulted in the gross profit of £288,400, being £26,800 less than the high record set up in 1917. After allowing for the two dividends and bonus, totalling 22s. per share (the same as for 1917), there was £136,500 to be carried forward, which is fully represented by surplus liquid assets. The fully developed ore reserves have recovered to 504,500 tons, but their average value is lower at 15.84 dwts. over 53.6 inches. At the beginning of 1916 it was officially estimated that the mine should last until at least 1926, but this calculation is more than likely to prove unduly conservative.

The Aurora West United Gold Mining Co., Ltd., despite the increasing burden of war handicaps, further reduced last year its liability to the General Mining Corporation to only a shade over £9,000. There was a serious fall in profits (which totalled only £3,166) during 1918 owing to a rise of over 3s. 3d. per ton in working costs, with at the same time some falling off in grade. The ore reserves have been temporarily further written down to 242,200 tons, averaging 5.6 dwts. over 41.6 inches.

The New Goch Gold Mines, Ltd., carried on its 1918 operations at a loss of £6,600 (against a profit of over £50,000 for 1917), but all but a few hundreds of this was compensated for by sundry receipts. A lower tonnage of poorer grade was crushed, and working costs increased even more seriously than in the case of the Aurora West. The ore reserves have been further reduced as a result of the recent adverse conditions to 111,700 tons, averaging 5.6 dwts. over 49 inches, but development in the claims leased from the City Deep has disclosed "encouraging values."

The difficulties under which the Roodepoort United Main Reef Gold Mining Co., Ltd., was working during 1918 are clearly indicated by the fact that, excepting January, each month's operations resulted in a working loss. In addition to war costs and labour difficulties the company suffered from serious water troubles in the lower levels of the mine. The result was that considerably less ore was treated and an aggregate loss of nearly £27,500 was recorded, against a profit of over £22,000 for 1917. The loans obtained from the General Mining Corporation were increased to over £362,000. The ore reserves have been cut down to 223,000 tons, averaging 6.02 dwts. per ton, and the manager points out that "it is of supreme importance to speed the development of the lower levels."

Like the Roodepoort United, the West Rand Consolidated Mines, Ltd., laboured under abnormal water troubles last year, and for that and other reasons experienced a working loss of just over £7,500, which, however, by the

aid of sundry revenue was turned into a net profit exceeding £10,000, against over £42,000 in 1917. It is confidently anticipated that the installation of a big central pumping scheme will, when completed, overcome the water troubles and, with other reliefs which should follow peace, allow of the mine in the comparatively near future returning profits more in accord with its extensive area. The ore reserves are put at 1,208,300 tons, averaging 6.1 dwts. per ton, against 5.3 dwts. a year ago on a larger tonnage.

The non-producing members of the Albu group, namely, the Cinderella Consolidated, the Rand Collieries, the New Steyn Estate, and the Sacke Estates companies, continue to mark time pending the return of normal financial conditions.

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Argus."—(a) Yes. (b), (c), (d), (e) See article on the subject in this issue. (f) We regard it as very probable. (g) They should be.

"W. H. K."—(1) Yes. (2) 10 per cent.

"G. M."—The National Bank is the agent in this country.

Swaziland Tin.

The following are the results of the operations of this company for the month of May, 1919: Concentrate recovered, 31.55 long tons; estimated profit (taking tin at £210), £612; adjustments in respect of previous shipments, £1,234; total, £1,846.

We (*Bulawayo Chronicle*) learn from the Belgian Congo that it is proposed to extend the Katanga railway, which now ends at Bukama, to a new terminus at a place which the Belgian Administration calls Kibouerbo, on the upper waters of the Congo. This is expected to get over the difficulty of navigation on the upper channels between Kabolo and Bukama, which at present often necessitate the discharge of cargo owing to the lowness of the water.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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WRIGHT'S ROPES

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DIVIDENDS FOR THE HALF-YEAR.

Transvaal Gold Mines Distribute £2,575,832—Far East Rand Contributes Three Quarters.

In the appended table will be found a complete list of dividends declared by Transvaal gold mines for the first half of this year, supplementary to the statistics contained in our last issue. The grand total is £2,575,832, including share bonuses, and it is to be noted that almost three-quarters of this is derived from operations on the Far East Rand.

COMPANY.	Date.	Rate per cent.	Capital. £	Amount. £	Previous Half Year.		Curr. Period Last Year.	
					Rate p.c.	Amount. £	Rate. p.c.	Amount. £
Brakpan Mines	June	12½	£806,600	£100,825	12½	£98,887	20	£158,220
City Deep	June	10	1,250,000	125,000	7½	93,750	20	250,000
City and Suburban	—	—	1,360,000	—	—	—	17½	25,500
Consolidated Langlaagte ...	June	5	950,000	47,500	5	47,500	—	—
Consolidated Main Reef ...	June	2½	1,247,602	31,190	2½	31,190	33¼	46,785
Crown Mines	June	5	940,106	47,005	5	47,005	15	141,016
Durban Roodepoort Deep ...	—	—	440,000	—	—	—	2½	11,000
Ferreira Deep	Mar.	7½	980,000	73,500	11¼	110,250	11¼	110,250
Geldenhuis Deep	June	2½	585,753	14,644	2½	14,644	5	29,287
Government G.M. Areas ...	June	17½	1,400,000	245,000	15	210,000	12½	175,000
Geduld Proprietary	B—	—	1,147,166	B—	6¼	71,698	5	48,500
Glynn's Lydenburg	Jan.	2½	170,000	4,250	7½	12,750	8¼	14,875
Langlaagte Estate	June	7½	886,500	66,487	7¼	66,488	5	44,325
Meyer and Charlton	June	50	200,000	100,000	60	120,000	50	100,000
Modder B.	June	45	700,000	315,000	40	280,000	42½	297,500
Modder Deep	June	50	500,000	250,000	50	250,000	47½	237,500
New Modderfontein	June	32½	1,400,000	455,000	30	420,000	21½	306,250
New Primrose	June	5	325,000	16,250	—	—	—	—
New Unified	June	5	250,000	12,500	5	12,500	5	12,500
Nourse Mines	June	—	827,821	—	—	—	3¼	31,043
Robinson	June	5	2,750,000	137,500	1	27,500	1½	41,250
Robinson Deep	June	—	806,807	—	—	—	—	50,000
Rose Deep	June	7½	700,000	52,500	7½	52,500	10	70,000
Simmer and Jack	June	1¼	3,000,000	37,500	—	—	1¼	37,500
Springs Mines	June	—	1,153,500	—	12½	144,185	10	115,000
Sub Nigel	June	5	5775,000	31,250	5	27,500	6½	36,666
Transvaal G.M. Estates ...	—	—	604,225	—	2½	15,106	3¼	22,658
Van Ryn	June	5	500,000	25,000	5	25,000	5	25,000
Van Ryn Deep	June	22½	1,196,892	269,300	22½	269,300	22½	269,300
Village Deep	—	—	1,060,671	—	—	—	3¼	39,775
Village Main Reef	June	22½	472,000	109,150	—	—	10	47,200
Witwatersrand	June	5	469,625	23,481	5	23,481	10	46,962
Wolhuter	April	2½	860,000	21,500	2½	21,500	3¼	32,250

A Exclusive of dividend amounting to £54,299 declared in January, 1918, in respect of operations during 1917.

B Distribution of shares purchased from Custodian of Enemy Property postponed till December (*i.e.*, whole year), probably two shares for 25 held.

c Declared January, 1919.

d 1s. per share on 475,000 fully paid shares and 6d. per share on 300,000 partly paid shares.

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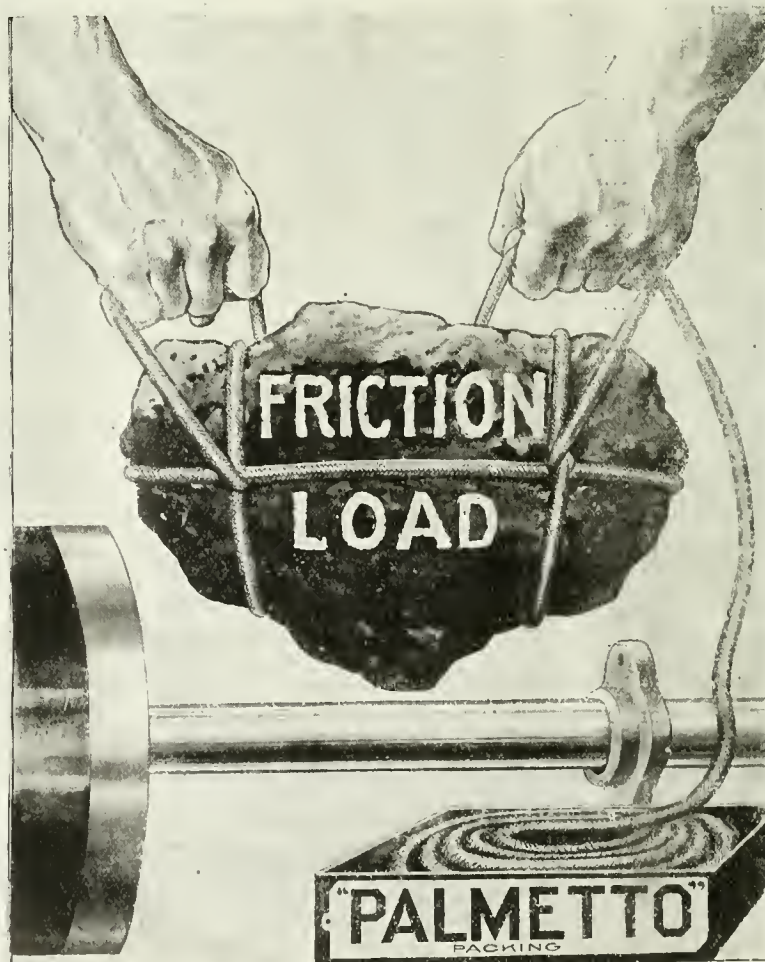
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MANGANESE IN THE TRANSVAAL.

An Important Deposit Near Krugersdorp—Description of the Ore and its Geological Conditions—Steel Production in View.

THE value of manganese in the process of high-class steel manufacture has been particularly emphasised during the past four years or so, when, owing to transport impossibilities, it has been found difficult to keep furnaces supplied with this very necessary metal. There have been, in the past, three principal sources of supply, which are in fact the principal manganese-producing districts of the world. They are the Caucasus Mountains in Southern Russia, where there is perhaps the world's largest supply of this indispensable mineral; India; and Brazil. This is the order of importance of the districts from a tonnage point of view in the pre-war period, although Brazil was a bad third, producing roughly only about 250,000 tons as against 1,000,000 tons from the Caucasus. The scarcity of manganese has been specially felt in the United States, where, although the total supply of manganiferous minerals is considerable, much of it is of low grade. It has, therefore, been a problem with the mining engineers and metallurgists of that country to raise the grade of the ore by suitable mechanical means, and to alter the metallurgical processes in such a way as to fit the conditions of the low-grade manganese deposits. In neither direction have the efforts

spoiled manganese ores from this point of view, but phosphorus and silica do so as well; the last-named on account of the diminished ratio of manganese that it implies. While discoveries of ore occurrences which contain mineral of low and medium grade are fairly common happenings, the finding of a deposit which contains rich manganese minerals, and unassociated with other detrimental elements, is comparatively rare and of correspondingly great importance.

THE KRUGERSDORP DEPOSITS.

The neighbourhood of Krugersdorp, among others in South Africa, has been long known as a manganese-bearing area. The mineral occurs in association with the dolomite beds of the Transvaal system. Several years ago, for instance, an impure wad, or manganese earth was mined for a little time on the farm Kromdraai, and was used in the earlier days of the Usher-Adair Cyaniding process. It was afterwards found to be unnecessary and the working of the wad was discontinued. On various occasions since then, however, and especially during the war, search has been made for purer and commercially valuable varieties of the



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made to date been particularly successful. There has been in the past only two varieties of manganese alloy in common use; spiegeleisen containing about 20 per cent. manganese, 5 per cent. carbon and the rest iron, and ferromanganese of the standard variety containing 80 per cent. manganese, about 6 per cent. carbon and the rest iron. When the Bessemer process was the only one of importance for producing steel, and when rails were the chief steel product made, the use of spiegeleisen was almost universal. The ratio of carbon to manganese is about 1:4 in "spiegel," and 1:14 in "ferro." When the openhearth furnace came into vogue it brought about the application of steel to a multitude of purposes for which wrought iron had been used in the past, and steel, to be suitable for these purposes, must be low in carbon. This requirement involved the use of ferromanganese. Rails have become a decreasing percentage of the steel output of the world's chief plants, and the importance of low carbon steels has grown greater and greater, so that in the period just before the war there was, in the United States, at any rate, no sale for spiegeleisen. Now, high grade manganese ores are necessary to produce "ferro," so that low-grade deposits which usually contain a prohibitive percentage of iron cannot be used. Not alone does iron

ore, and reports have come in from time to time that the search has been successful. Nothing definite appears to have been done, nevertheless, until a discovery was made on the farms Zwartkrans No. 67 and Sterkfontein No. 68, in the district referred to. The name of Sterkfontein, by the way, has become familiar in connection with certain famous caves in the dolomite series, that have been objects of considerable local interest. The vicinity is also well known as a lime-producing centre. The discovery just mentioned has been taken in hand by a company known as Manganese, Ltd., with a nominal capital of £50,000, of which 5,000 shares of the nominal value of £1 each have been set aside to provide working capital, 40,000 shares are assigned for the purchase of the mineral and other right; and 5,000 shares are held in reserve. The objects of the undertaking, as stated in the prospectus, are "to take over certain rights on valuable properties in the Krugersdorp district, Transvaal Province, on which has been discovered manganese di-oxide, for which high prices per ton have been recently paid by local firms requiring quantities for steel hardening and other purposes. Pigments abound in the company's properties, and the company now have a range of colours of great value suitable for oils, water colours and

distempers." It is anticipated, the prospectus adds, that a large export trade will be done in both manganese and pigments, which should prove very profitable to the company. The following certificates of analysis of samples of ore taken from the properties have been returned by the National Bank of South Africa, Ltd., Johannesburg, and by Messrs. Littlejohn & Whitby respectively:

NATIONAL BANK.		No. 1.	No. 2.
		Per cent.	Per cent.
Manganese Di-oxide (MnO ₂)	...	77.9	85.75
Iron (Metallic) (Fe)	...	0.6	0.7
Silica (SiO ₂)	...	1.15	3.9
Sulphur (S)	...	0.025	0.027
Phosphorus (P)	...	0.104	0.05
Moisture (@ 100° C.)	...	0.65	0.25
Total Manganese (Metc.) (Mn)	...	56.1	59.4

LITTLEJOHN & WHITBY.		No. 8.	No. 6.
		Per cent.	Per cent.
Manganese (Mn)	...	47.59	58.70
Manganese Di-oxide (MnO ₂)	...	70.82	92.40
Oxide of Iron (Fe ₂ O ₃)	...	6.90	0.85
Phosphoric Oxide (P ₂ O ₅)	...	0.03	Traces.
Silica	...	11.65	1.40

In a paper on the valuation of manganese ores which was contributed by Mr. Geo. T. Holloway to the Transactions of the Institution of Mining and Metallurgy, the author pointed out that a common basis for valuation was 50 per cent. metallic manganese for metallurgical, and 60, 70 or 80 per cent. of the peroxide for chemical purposes. The

largest contracts and best prices, that is to say, were obtainable for 50 per cent. ore, although ore down to 45 per cent. Mn. was saleable. The basis for silica was about 8 or 9 per cent., and for phosphorus 0.15 to 0.20 per cent. From these figures it will be seen that the analysis given above show mineral of distinctly high quality. Caucasian, Indian and Brazilian ore were commonly sold in lots of thousands of tons before the war, averaging from 50 to 55 per cent. of manganese.

MODE OF OCCURRENCE.

The conditions in which the manganese ores are found on the company's farms are naturally of considerable importance. It has generally been assumed that most, if not all, the manganese in the Transvaal occurs as an earthy deposit resulting from the metamorphosis of the dolomite. This rock is largely impregnated with manganese, and its removal by the action of underground waters has been followed in many places by large accumulations of manganeseiferous earth, containing sometimes nodules of manganese ore. These deposits are of course low-grade mineral and the separation of the purer nodules is a matter of difficulty and expense, so that as sources of manganese the earthy occurrences are scarcely within the limits of practical business. The ores on Swartkranz and Sterkfontein, however, are of a very different kind. Here an examination of the numerous pits that have been sunk makes it clear that the manganese ores are veins which intersect the strata more or less along the planes of sedimentation as far as direction goes, but form generally a network of closely intersecting seams with occasional pockets and lenses of fairly large size. It is impossible to say how thick the section of dolomite and chert is over which this vein structure prevails, but it is doubtless a wide one, even allowing for the fact that the average dip of the beds is low and that

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a narrow section may appear as a wide band along the out-crop. Wherever pits have been put down upon the surface of these farms the crushed cherty rock with numerous seams of pure high-grade manganese ore is usually in evidence. In addition to these bodies there is a vast accumulation of loose ore and nodules in the overlying detritus. It is impossible at this stage to form any idea as to the quantity of ore that may be extracted from any unit area of the properties. One can only say that if the prospecting pits, which have been put down in an irregular and haphazard sort of way, without any rule as to direction or surface evidence, are to be relied on as showing normal conditions, the quantity of high-class ore is unusually abundant.

THE FUTURE OF MANGANESE ORE.

The importance of manganese in the manufacture of steel may be gathered from the statement that every ton of steel takes an average of about 17 lbs., or 0.75 per cent. of metallic manganese is required for every gross ton of steel made. This is generally added to the steel in the form

product, roughly, of 800,000 tons of high-grade ore, and 345,000 tons of low-grade ore. In addition to this some 25,000 tons of high-grade ore were used in the States for dry-batteries, chemical purposes, and in other ways. We have, unfortunately, no figures relating to the world's use of the metal, but from what has already been said it will be seen that the demand is already very great, and for high-class ores is likely to be an increasing one. The development of systems of communication in various countries and the increasing use of steel for many purposes will expand the market for manganese very considerably, and in this event high-class material will always be specially asked for. In South Africa the initiation of pig iron production which was referred to in this journal a few weeks ago is likely to lead to a great industry. The making of steel for rails and other uses will follow naturally. Indeed the manufacture of steel will probably be inaugurated at a very early date, independently of the progress of the iron industry. The presence of a large deposit of the best class of manganese ore within easy reach of the foundries of the Rand is a circumstance that has already drawn attention to its possibilities for local use. Already it has been used for "bringing back" quantities of old scrap iron and slag waste to good white iron by throwing in ferro-manganese, and in this direction there is at the moment a useful field for its employment. Ductile castings have also been made locally by its use, and an ironfounder has guaranteed to turn out malleable iron and ferro-manganese on a large scale shortly. A few initial successes in this direction—and those interested in the matter are quite confident as to their ability to secure them—will probably prove an important stimulus to the starting of a local steel industry. It has been looked forward to for years by many not only here, but elsewhere, but conditions have not appeared favourable. There seems to be nothing wanting to-day but enterprise and confidence: materials of the best kind are available in abundance.

THE PURPOSE OF MANGANESE IN STEEL.

The first function of manganese, broadly considered, is to refine and "settle up" the molten bath of steel. The aim is to put the metal in a proper condition for pouring and to produce ingots (or castings) of the desired quality and texture. While manganese is not the most efficient element that can be used for this purpose, calculated from the heat of combustion of the element to its oxide, it is the most



PREPARING MANGANESE FOR JOHANNESBURG MUNICIPAL GAS WORKS.

of an alloy, either as 80 per cent. ferro-manganese or 20 per cent. spiegeleisen. During the year 1917 286,000 tons of ferro-manganese and 193,291 tons of "spiegel" were made in the United States alone, the former mainly from imported ores, because, as already stated, that country can not produce much high-grade ore of its own. Some 45,381 tons of ferro-manganese were imported. The metallic manganese represented by these alloys was 304,000 tons, the



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satisfactory on account of the excellent condition (freedom from objectionable foreign inclusions) in which it leaves the bath. Manganese is also desirable in steel to improve the rolling properties, in which capacity it appears to serve a dual purpose. First, the manganese deoxidizes and refines the molten steel in such a way as to give ingots of the desired texture without robbing the steel of its hot-working properties. Such ingots may be rolled into finished shape without the formation, in excessive amount, of fissures or of surface defects. Other reducing agents, such as aluminium, silicon, etc., are prone to leave the metal in a poor condition for rolling and forging; while they eliminate one cause of hot shortness, iron oxide, they fail to convert the sulphur into a harmless form, as does manganese, and leave behind their highly refractory oxides, both of which tend to produce poor rolling qualities. Second, manganese, by retarding the rate of coalescence, or grain growth, renders steel less sensitive to the effects of the high rolling temperatures and is supposed to promote plasticity, at least in ordinary steels, at rolling temperatures. Silicon and aluminium, on the other hand, increase, rather than decrease, the grain size of steel. Finally, manganese is desired in the finished steel to secure certain physical or mechanical properties or to make the steel more amenable to subsequent heat treatment. Manganese is a very valuable element to the steel industry and its use cannot lightly be dispensed with, says Samuel L. Hoyt in a bulletin of the American Institute of Mining Engineers. It is true that material, such as American ingot iron, can be successfully rolled even though no manganese is added, but greater time and care are required. Also, even though higher carbon steels with low manganese can be as successfully rolled, it would be impossible, in so far as we now know, to secure a satisfactory substitute for manganese, which is abundant in this country, to perform all three functions.

SOME SUBSIDIARY INDUSTRIES.

In addition to the manganese ore deposits on Swartkranz and Sterkfontein, Manganese, Ltd., possess a practically unlimited supply of manganiferous earth and other natural pigment earth of the best quality from making a high-class paint. Messrs. Evans and others here and in Natal have ordered large quantities for the purpose and their report upon it is very satisfactory. The company expect to derive a large income from this material, for the price of good pigment is high and the demand enormous. A report by Mr. Edward P. Binet, J.P., A.M.I.C.E., F.G.S., of Krugersdorp, on these pigment occurrences is as follows:—"Farm Waterval No. 71 is situated a little over three miles N.W. of Krugersdorp railway station. On this farm there is an enormous body of valuable brown oxide, suitable for the manufacture of high-class paint, besides extensive deposits of other colour. Manganese ore also exists on the property. All these deposits can be easily and cheaply worked. Farm Elandsvlei No. 23 is situated to the west of Randfontein, some ten miles by road from Krugersdorp, five miles from Randfontein and about two miles from Tarlton Siding on the railway line to Zeerust. The pigments to be found on this farm comprise an exceptionally high-class "umber" (composed of a mixture of iron and manganese oxide) and valuable red oxides of beautiful and varied shades. From surface indications, and as far as I was able to judge from the excavations made, these deposits are of great extent. Farms Weltevreden No. 15 and Elandsfontein No. 665 are situated about forty miles by road to the west of Krugersdorp, and some eight miles south of Cyferbult station, on the Zeerust line. Besides red oxides, the important feature on these farms is the existence of most extensive and valuable deposits of brilliant "yellow pigment," which are probably unequalled anywhere else in the country. Although these pigments have been in use by the natives and farmers as colouring material for many years, it is only recently that their economic importance has been realised. These oxides are of immense value owing to their proved stability, permanence and durability. Any variety of colours can be made by proper admixture, ranging from the palest and most delicate tints to the deepest possible shades." It may

be added, in conclusion, that the company propose to manufacture permanganate of potash and other chemical products.

OTHER SOUTH AFRICAN OCCURRENCES.

It will be of interest to add some notes with reference to the only other deposits of manganese ore which, as far as we are aware, have attracted any great attention in South Africa. They are found in Table Mountain sandstones, mainly between Worcester and the Cape Peninsula. The localities are Hout's Bay, Constantia Nek, False Bay, Botha's Halt, Du Toit's Kloof, near Wellington, Caledon, and French Hoek. They show stringers, veins and lodes, except at Caledon, where the ore is disseminated in a kopje around the site of the famous hot springs, and becomes poorer and more siliceous as it recedes from the centre. In a report by Mr. A. B. Welsh, B.Sc., of the Mines Department, it is stated that of all the deposits visited, so far as can be judged from surface indications and the amount of development done, only three seem of any extent and these are: (1) The deposit at Caledon; (2) the deposit at Du Toit's Kloof, Wellington; (3), the deposit at Hout's Bay. As regards these three occurrences, it may be of interest to compare them roughly, as is done in the following table, according to their most important constituents:—

	Manganese. Percentage (Approx.)	Iron. Percentage (Approx.)	Silica. Percentage (Approx.)	Phosphorus Percentage (Approx.)
Caledon	38	16—30	6.5	.378
Du Toit's Kloof ...	40	13—22	.75—1	.47—57
Hout's Bay	30	9—16	6.00—12	.47—66

The above results refer to clean hand-sorted ore and the results are expressed in percentage of metal throughout. Of the above deposits the Caledon ore seems very much more extensive than any of the others, and the ore there can be quarried, whereas at the others vein mining would have to be performed. Messrs. Pattinson and Stead's report on the class of ores met with in these deposits is as follows:—"You will notice that in every case the total phosphorus is very high, being about ten times as much as is usually present in ores used for making spiegeleisen. They are therefore quite unsuitable for that purpose. They could, however, be used for the manufacture of basic phosphorettic iron, as, in that case, phosphorus does not matter. The quantity of ore required for that purpose is not very great. The market price delivered in this country, in the early part of 1914, for ore of this character was about 30s."

Elevator Expert's Fee.

In reply to a question before the Select Committee on Railways and Harbours, Sir Thomas Hyslop said Mr. W. Littlejohn Philip, O.B.E., the consulting engineer appointed by the Government to report on the location and design of grain elevators in the Union, was being paid a fee of £1,000 a month. Mr. Johann Rissik (another member of the Railway Board) added that it was the best arrangement that could be made, and tenders were invited for the service. He did not think it would have been better if they sent a few promising young engineers to other countries to make a thorough investigation of the system as it was working elsewhere, as however clever a young engineer might be, he wanted experience, and the experience required in a matter of that kind could not be gained in a couple of years. They wanted a man who had seen the system grow up from small beginnings, and who had made it his life calling. Very likely they were going to spend from a million to a million and a half on the grain elevators, and to spend that money to the best advantage they must have the most qualified and experienced man available to advise them. It was not merely engineering questions that entered into the matter; commercial experience and a knowledge of business relations were also necessary.

THE WEEK IN THE SHAREMARKET.

Small Stocks Look Up—Run on Compound Diamonds—Prices Firm.

The only early business on Friday was in Compound Diamonds at 7s. The call was dull. The Modder stocks were firm; Government Areas passed without a buying quotation; Spring went lower. Crown Diamonds remain steady. After the call Government Areas were sold at 92s. During the course of the afternoon the market eased off, Crown Diamonds falling to 25s. 6d. At the close Compound Diamonds advanced to 9s. At the opening on Saturday Compound Diamonds monopolised attention and on the report of a good strike rose from 9s. to 13s. The call brought no change in prices beyond a recovery in Government Areas to 93s. Business was reduced to twelve sales. The Peace signature had no beneficial effect on Monday's market. Compound Diamonds rose at the opening from 13s. 9d. to 15s. The call was irregular; African Farms and Crown Diamonds were both weaker. Zaaipplaats, which had declined to 9s. from 9s. 9d. on Saturday, had a further drop, which brought them down to 7s. 9d. Van Ryn Deeps and Sub Nigels came the turn better. In the small stocks Western Rand Estates have been in demand of late. It is reported that the property is being taken over by an American syndicate. Compound Diamonds, after reaching 18s., receded to 16s. 9d. Crown Diamonds closed at 24s. The first quotation was made for Daggafontein options, the four-years at 1s.—5s., and the five-years at 5s.—6s. At the opening on Tuesday Crown Diamonds made 25s.; Modder Easts were sold at 20s., New Eras at 10s. and Compound Diamonds at 17s. 6d. On call most of the leading stocks were ex-dividend, and after making the necessary allowances prices appear to have been generally unchanged. The market was dull all day. Daggafonteins improved slightly, while Compound Diamonds fell to 15s. On Wednesday morning Compound Diamonds were sold at 16s. At the call two small stocks came to the front—Western Rand Estates with a further advance of 1s. 6d., and Middelvels with sales at 2s. Modder Deeps were strong and passed their Modder B. rivals by 2s. 6d. on the buying quotation. Daggafontein Mines, Sub Nigels, Government Areas and Van Ryn Deeps were all to the good, the remaining stocks being unchanged. Prices were generally firm on Thursday with advances in African Farms, Geduld Props, Sub Nigels, Western Rand Estates and Middelvels. The Modder group was neglected. Outside stocks have been active owing to the large dealings in Compound Diamonds and their rapid advance in price. The previous week a gain of between 4s. and 5s. was noted, while under the time now under review a further advance of 11s. was made, the starting figure being 7s., the top price 18s., and the closing quotation 15s. Monteles, from sales at 17s., weakened to 15s. sellers; Koorloos were dealt in at between 16s. 6d. and 20s.; Sakalavas at 6s. 6d. to 8s. 6d.; Makganyenes only recorded sales of odd numbers at 34s. Other sales were New Farms, 1s. 10½d.; Phoenix, 1s. 1d. and 1s. 2d.; Union Tins, 5s.

	Fri. 27th.	Sat. 28th.	Mon. 30th.	Tues. 1st.	Wed. 2nd.	Thurs. 3rd.
African Farms	14 3*	14 3†	14 0†	13 9	13 0*	14 0
Anglo-Amer. Corp.	26 0†	22 6*	—	23 0	—	22 6*
Apex Mines	7 5*	7 5*	—	6 9*	6 9*	6 9*
Aurora Wests	—	—	—	7 6†	—	5 6
Bantjes Cons.	2 3*	2 3*	2 6†	2 3*	2 3*	2 3*
Brakpan Mines	62 6*	63 3	62 0†	60 0	60 3*	60 0*
Brick and Potteries	—	4 0*	4 0	—	4 0*	4 0*
British South Africa	20 0*	21 0	21 0†	21 0*	21 0*	21 0*
Bushveld Tins	1 3*	1 4*	1 6	1 6*	1 7	1 6†
Cinderella Cons.	4 6*	4 6*	4 9	4 9*	4 9*	4 9*
City and Subs.	6 9*	7 0*	7 6	7 6	7 6†	6 6
City Deeps	54 6†	54 0†	52 6*	53 0†	53 0†	53 0†
Clydesdale Collieries	24 0*	—	24 0*	—	23 6*	—
Con. Investments	29 0*	30 0*	—	28 0*	28 0*	—
Con. Langlaagtes	18 3*	—	—	—	18 0*	19 0*
Con. Main Reefs	9 7	—	9 6†	8 9*	9 0*	8 9*

	Fri. 27th.	Sat. 28th.	Mon. 30th.	Tues. 1st.	Wed. 2nd.	Thurs. 3rd.
Con. Mines Selection	21 6	21 6†	21 6	—	—	—
Coronation Freeholds	2 0†	2 3†	2 0	2 3†	1 9	1 9
Coronation Syndicates	—	—	—	2 6*	—	—
Crown Diamonds	26 0	25 0*	24 9	—	24 9	24 6*
Daggafontein Mines	20 6*	20 6*	20 6*	21 6	2 6	2 0
Do. (Options)	—	—	5 0*	—	—	—
East Rand Coals	2 6*	2 6*	3 6	2 6*	2 6*	2 6
East Rand Deeps	0 10*	0 10*	—	—	0 10*	0 10
East Rand Minings	17 0	17 0†	17 0*	—	17 0*	17 3*
East Rand Props.	6 3	6 0*	6 6†	6 0*	5 9*	5 10*
East Rand Debs.	£62*	—	—	—	—	—
Eastern Golds	—	1 0*	—	1 0*	1 0*	1 0*
Frank Smith Dmds	4 7*	4 7	—	4 5	4 4*	4 6
Geduld Props.	35 6	45 3*	45 3*	44 6	44 6*	45 6
Ginsbergs	1 7*	—	—	1 6*	1 6*	1 7*
Glencarns	1 0*	1 0*	1 0*	1 6†	1 0*	1 0
Glencoe Collieries	6 0*	—	6 0*	6 0*	6 0*	—
Glynn's Lydenburgs	17 0*	—	—	—	17 0*	—
Government Areas	93 0†	93 0	92 6*	90 6*	90 0	90 3
Jhb. Bd. of Ex.	30 0*	30 0†	30 0	30 0*	30 0*	30 9*
Jupiters	—	2 6*	—	—	—	2 8*
Klerksdorp Props	—	1 2*	1 2*	1 2*	1 2*	1 2
Lace Props.	16 3*	—	—	15 9	—	—
Leeuwpoot Tins	23 6	23 3	23 3*	23 3*	23 3*	23 3*
Luipaardsvlei Est.	—	3 6†	—	2 0*	—	—
Lydenburg Farms	8 9†	—	8 3*	8 4	8 4*	—
Middelvels Est.	1 3*	1 9*	—	1 6	2 0	2 6
Modder B.'s	163 0*	163 9*	165 0	153 9*	152 6*	160 0†
Modder Deeps	160 0	160 6*	161 3	152 0	155 6*	156 0†
Modder Easts	20 7½	20 6*	20 6	20 0	20 3	20 3*
Do. Options (3 yrs.)	3 4	3 0*	3 0*	3 0	2 10*	2 11*
Do. Options (4 yrs.)	5 1*	5 0*	5 1*	5 0	5 0*	5 0
Hume Pipes	28 0*	—	28 0	27 6*	27 6*	28 0†
Natal Navig. Colls.	22 0*	22 0*	22 0*	—	23 0*	23 0*
National Banks	—	294 0	—	300 0a	—	300 0†
New Boksburgs	—	—	—	1 0	1 0*	—
New Eland Diamonds	22 0*	23 0	—	24 0*	24 0*	25 0*
New Era Cons.	10 0*	10 0*	9 9*	10 0	10 0*	10 0*
New Geduld Deeps	4 9*	4 11†	4 8*	4 8*	4 9†	4 6
New Kleinfonteins	9 0	9 0†	8 9*	8 9*	8 9*	9 0*
New Modders	£27½†	£27*	£27*	£25½	£26*	—
New Unifeds	—	—	4 0*	3 0*	3 0*	—
Nigels	5 0*	—	—	5 0*	5 0*	5 0*
Nourse Mines	8 6*	8 3*	10 0†	10 0†	10 0†	—
Premier Deferreds	160 0*	—	155 0*	—	—	—
Premier Preferreds	150 0†	—	150 0†	150 0†	—	140 0*
Pretoria Cements	69 6*	70 0†	70 0†	67 0*	67 0*	67 0*
Princess Estates	2 5†	2 0†	—	—	2 3*	2 3
Rand Collieries	3 3*	3 3*	—	3 3	—	—
Rand Nucleus	1 5*	—	1 5*	—	—	—
Rand Select. Coro	79 0*	79 0*	79 0*	74 0*	75 0*	76 0
Randfontein Deeps	4 9†	—	4 3*	4 3*	4 3*	4 3
Randfontein Est.	15 0†	—	—	14 3*	14 6*	—
Roberts Victors	13 0†	11 6*	11 6†	11 6*	12 6	13 0*
Rocibergs	4 2*	4 1*	4 1*	4 3	4 1*	4 3
Ryan Nigels	3 3*	—	3 3*	—	3 6	3 3
Shebas	1 6†	1 0*	1 6*	1 6*	—	—
Simmer Deeps	1 3†	0 10*	—	1 3†	1 3†	—
S.A. Breweries	—	30 0*	—	—	—	28 3
S.A. Lands	5 10*	5 10*	5 11†	5 11†	6 0†	—
Spring Mines	47 6	47 6	47 6	47 0*	47 0*	47 0
Sub-Nigels	20 6*	20 9	21 4†	20 9*	21 3a	22 3*
Swaziland Tins	12 0*	12 0*	12 0*	—	—	—
Transvaal Lands	27 6*	27 6*	27 6*	—	—	—
Trans. G.M. Est.	—	—	—	12 0*	12 0*	—
Van Ryn Deeps	70 9a	70 0	71 0	66 0*	67 0*	67 6
Village Deeps	10 6*	—	13 0†	13 0†	10 6	10 6*
West Rand Cons.	2 8*	—	2 8*	—	2 8*	2 8*
Western Rand Estates	3 9	4 0	4 2	5 0	6 6	7 3
Witwatersrands	17 0	15 0*	17 6†	—	16 6†	16 0†
Wit. Deeps	14 0†	13 9*	13 9*	13 9*	13 9*	13 9
Wit. Townships	27 6*	29 0*	29 0*	30 0†	30 0†	—
Wolhuters	2 0*	2 0*	2 0*	2 0*	2 2*	2 3
Zaaipplaats Tins	9 9	9 9	7 9	7 6*	7 0	7 3
New States	24 0	24 9	24 9*	25 0a	25 0*	25 6
South Van Ryns	9 0	8 10*	9 0	8 9*	8 9*	8 9
S.A. Mkal.	17 6	15 0*	—	18 0†	—	17 6†
Tweefontein Colls.	22 6*	22 6*	23 0*	22 6*	22 6*	—
Van Dyks	1 9	2 0*	—	2 3*	2 3	2 3*
West Springs	22 3	22 0*	22 0	21 9*	21 9*	22 0
Do. Options	5 6*	5 9	5 9*	5 9*	5 6a	5 9*
De Beers	£21½	£21½*	£21½*	£21½*	—	£21½*
Union 4½ per cent.	£99*	£100†	£101*	£99†	—	£99
Union 5 per cent.	June 27th.	£102 17s. 6d.	28th.	£102 17s. 6d.	—	—

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Geological Society of South Africa.

The special general meeting of the Geological Society of South Africa, postponed from the 7th June, will be held in the Council Chamber, Chamber of Mines, Johannesburg, on Monday, 7th July, 1919, at 8.15 p.m., at which the following recommendation of the Council will be submitted for consideration and adoption if thought fit: "That certain MSS. and various maps and sketches accompanying same, dealing with the geology of Griqualand West, by the late Mr. G. W. Stow, and now in the possession of the Society, be presented by the Society to the Public Library, Cape-town. That Library already has in its possession various documents by the same author, and seeing that the MSS., maps and sketches above referred to deal with the geology of a portion of Cape Colony they are therefore of more interest to that Colony than to the Transvaal." Immediately following the special meeting the ordinary monthly meeting of members of the Society will be held, at which the following business will be transacted: The minutes of the ordinary monthly meeting of members held on 7th June, 1919, will be read. Closer working and joint housing of technical and scientific societies on the Rand. This matter to be considered. The following papers will be open for discussion: "A Review of the Reptilian Fauna of the Karroo System of South Africa," by S. H. Haughton, B.A., etc., Assistant Director, South African Museum; "The Geology of the Country around Pasipas, near Bulawayo," by A. J. C. Molyneux; "The Coastal Limestone of the Cape Province," by W. Wybergh. The following paper will be read: "The Geology of the Sabi Valley, Mashonaland," by F. P. Mennell, M.I.M.M.

* * * *

Cam and Motor Development Scheme.

Towards the end of last year crushing operations were suspended at the Cam and Motor mine, Rhodesia. Arrangements having been concluded recently to provide fresh working capital, a large scheme of development is to be carried out pending the restarting of milling operations. Mr. C. B. Kingston, consulting engineer to the Rhodesia Gold Mining and Investment Company, which is a large shareholder in the Cam and Motor, has made a report on the mine, in the course of which he writes: "The Cam and Motor has had a very chequered career, and the mine has not earned the profits it ought to have earned. The lode is a very fine body of ore of medium grade and somewhat complex character. Taken from top to bottom, the lode has been consistent in value over large areas, although variable in value within limited areas. To meet this condition and provide means for controlling and regulating the grade of ore milled, it is essential to have a considerable number of stopes available for work at all times. This need was kept in view in laying out the new development, and the levels will be driven at shorter intervals than has been the custom up to date. The blocking out of a large reserve of ore is of hardly more importance than the provision of a very large stoping area. The grade of the ore in the lower levels is fully maintained, and there is nothing to suggest any diminution in value for a much greater depth. It has been decided to open the new levels in the footwall instead of opening them in the ore, and the full width of the lode, as has been done in the past. The old method necessitates the use of an excessive quantity of timber, which perishes rapidly in this climate and entails a continuous heavy outlay on maintenance. The new method of working will require much less timber and will cost less for maintenance."

DIRECTORY OF SOUTH AFRICAN MANUFACTURERS, 3rd Edition, 1919.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Mining Material—A Little Scare On About Prices—Trend of Business—Iron, Steel and Piping—Oils and Colours—Electrical Goods—Timber and Building Material—Peace Signing Fell Flat.

QUITE a little scare seems to have taken possession of merchants in the mining material business. This has been referred to on several occasions of late, but more particularly when the Transvaal makers of steel and iron reduced their prices over a month ago to keep pace with the quantities of iron and steel coming principally from Canada and America. The crisis to-day may be in consequence of the Peace signing having fallen so flat throughout commercial circles here. Although it may be generally stated that most of the old orders have now been executed, yet what has happened is that iron, steel, wire, wire nails and such like have recently been coming into South Africa upon an overloaded market, and also with the mines being such poor buyers whilst reducing their stocks. The idea is that many holders have opinions that considerable dumping of iron, steel and mining hardware will be made into South Africa; for example, there must be immense quantities of picks, shovels and all kinds of bar iron hoarded up by the military that needs an outlet, and what better place than South Africa? The Central Powers also will have plenty of ordinary tools to fulfil their requirements. The manufacturers in Britain are completing and sending out almost old forgotten orders, or rather orders they never expected would have to be fulfilled, as a big consignment of fencing wire ordered some four years ago has recently arrived and is now being sacrificed at about £1 per 100 lb. bundle. The Americans and Canadians are constantly sending consignments forward, and people are getting rid of such things as bar iron, fencing material, wire nails, etc. Not only those people who don't think it wise to carry, considering their uncompleted orders, but others there are who are selling when anything like opportunity offers and so realising through misgivings as to the future and not owing to financial reasons. Another important point has been raised that there are very few markets better than South Africa from a world's outlook. This undoubtedly is recognised by America, Canada, Japan, etc. Of course, when the world settles down again into manufacturing at reasonable rates things may be different. In the meantime many of our merchants do not like the immediate outlook for mining material and hardware goods. This will naturally be to the advantage of the mining industry and also for our agricultural progress, as it is pretty clear that foodstuffs throughout the world will even get dearer when the European Powers, Russia and Bulgaria come fully into the market.

TREND OF BUSINESS.

The brightest feature of the week has been the announcement in the last issue of the *Mining Journal* as to the reconstruction of the Western Rand Estates ("Pullingers") by the assistance of American capital. Naturally one wishes them every success, because it may revive the mining indus-

try on the Western Rand, which had become very depressed throughout the war period. Most of our business is being done with outside propositions; it is said that one of the places in Rhodesia telegraphed Johannesburg for quotation for some hundreds of tons of crude oil for fuel purposes. The railways, municipalities, as well as the diamond mines, are doing more on the Commercial Exchange than the gold mines, who seem very determined to reduce their stores. Our local makes of iron are being requisitioned from all parts of the Union. A quotation was also asked from London for monkey nuts. In May a quotation was given for £19 10s. and now that has been advanced to £30 a ton. It is understood, however, that through the delays of the cables and the procrastinations on the other side, business so far has not culminated. These nuts were required for the purpose of making oil and presumably for margarine purposes. Undoubtedly the world is looking to South Africa for much of its raw material, so much so that it was considered worth while to send a cable from London regarding a director of one of our companies who, in seconding the annual report, said he had just returned from a visit to South Africa, "and was much impressed with the general position in South Africa at the great prospects immediately in view. The impression had been forced upon him as he travelled through the country that South Africa was on the very threshold of a great industrial advance."

IRON, STEEL AND PIPING.

New iron galvanised piping is offered at 5d. per $\frac{1}{2}$ inch and 6d. for $\frac{3}{4}$ inch, some of which cost 10 $\frac{1}{2}$ d. per ft. to land. This is one of the features in the slump in prices, as by one of those peculiar coincidences that often happen, speculators took it into their heads to import piping of all kinds, some of whom got badly landed through the superabundance of stock. In this respect the manager of a harness warehouse said that the speculators were afraid to touch any of his steel and iron goods because expert knowledge was required in ordering them. He wished his firm had purchased a few thousand pounds' worth a few years ago, which would have been showing them a very handsome profit to-day. That, however, is by the way. There is plenty of imported bar

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iron in the market at 35s. per 100 lbs. for large sizes and 37s. 6d. to 45s. for the smaller. Merchants have been very chary this week in reference to giving quotations because they say they are so unreliable from day to day. Travellers are very busy in getting round and offering some lines, and it is not an unusual thing to find one quoting 50s. and the next 45s. Flat galvanised sheets dropped about £20 a ton, being now from £45 to £50. Angle iron, 1 x 4 x $\frac{1}{2}$ inch, was 58s. in April and is now 42s. Shovels are selling at 67s. 6d. a dozen as compared with 100s. a little while ago. The following are a few standard quotations: Imported mild steel, 6 $\frac{1}{2}$ d. per lb.; brass rods, 3s. 6d. per lb.

OILS AND COLOURS.

Linseed oil is firmer at 11s. and 11s. 6d. per imp. gall.; it appears that it is badly distributed, as a Johannesburg firm has sent a consignment to East London this week, and they give the quotation at 75s. raw and 85s. boiled for a case of 2-4's. White lead is done at 65s.; turps, 70s. for 2-4's and 75s. for 10-1's. Salad oil, best American, 135s. 140s.; South American, 120s.; South African nut oil, 65s., all per case of 2-4's. Olive oil is very firm at 30s. per gall., owing to the scarcity. Castor oil, medicinal, 100s.; mining do., 60s.; mineral do., 45s.; engine oil, 40s. to 42s. 6d.; lubricating oil, 40s. to 45s.; grease, £45 per ton imported; do., local, £35 per ton; paraffin, 22s. 6d. to 24s.; motor spirit, 38s. 6d.; motor oil, 7s. 6d. to 8s. 6d. per gall. Business and the demand are good for all kinds of paints, ready mixed, and the various ingredients to make same. This wonderfully mild winter has given people the opportunity of having their places painted, more particularly outside. A wholesale man in quite a fair way of business states that he could sell all his stock of paint ingredients in one line at full rates to other wholesale dealers, but naturally he has to keep his ordinary trade connection together.

ELECTRICAL GOODS.

The scarcity of tubing is more marked than ever to-day and 10s. a length is cheerfully paid for what normally can

be bought for 5s. or 6s. Several firms are eagerly awaiting consignments already arrived in South Africa for the despatch of which to the Transvaal the Railway Department—some people say on account of their disinclination to employ sufficient labour and the absence of trucks—is still lagging behind. Country orders are still plentiful. There has as yet been no reduction in lamps, although, as it is now an open secret that the Association controlling the price of same has come to an end, reductions in the near future can be expected.

TIMBER AND BUILDING MATERIAL.

Business is good both in town and country, with a steadier tendency for prices of Baltic timber and roofing iron. Deals are 1s. 6d. to 1s. 7d.; floorings, 8 $\frac{1}{2}$ d. to 8 $\frac{3}{4}$ d.; and ceilings, 6d. to 6 $\frac{1}{4}$ d. per ft. Galvanised roofing iron is 1s. 3 $\frac{1}{2}$ d. per ft. up to 10 feet and 1s. 4 $\frac{1}{2}$ d. over that length. According to oversea advices there is no great rush by the builders to secure forward timber contracts, because what with the prices of material and the cost of labour, a double rent has to be demanded for houses erected to-day, as compared with the pre-war period. However, a demand will be in evidence from the British Government and municipalities for the erection of State-aided houses. The demand from Central Europe will not be exorbitant, as that part was not damaged by the war, and the devastation done in Belgium and France will take several seasons to in any way put right. Therefore it is anticipated that the price of deals will remain near about 1s. 6d. per ft. for some time to come. However, whatever happens in decreased cost will evidently be more than counterbalanced by the demands of labour, as three months' notice is likely to be given by building artisans for an advance to 3s. 8d. per hour. In the second-hand market prices remain much the same, but the absence of stocks is most marked, therefore trading is very slack indeed, although there are plenty of enquiries. There are fair quantities of second-hand bulk timber from dismantled batteries which, however, only moves off slowly, in fits and starts as it were.

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The Week's Meetings.

RAND MINES, LTD.

Speaking at the annual meeting of the Rand Mines, Limited, Sir Evelyn Wallers said: When last I addressed you we were going through critical times in the great world war. To-day in gratitude we know that the vast sacrifices of our own people and of our Allies have been consummated in a great victory for liberty. That a lasting peace will result is our hope, and also that we shall be both able and anxious to meet with constructive thought and work the even more difficult problems of peace that the war has so definitely set before us. The past year has brought heavy additional burdens to be carried by the gold mining industry, and, therefore, our profits have again been very materially affected. The reduction in dividend income on our shareholdings is a serious one, being £268,480 below the amount similarly derived in 1917. During 1918 two dividends were distributed absorbing £451,773, not a very satisfactory return on the capitalised value of the company. We invested during the year £65,470 in shares, etc., and carried forward unappropriated the sum of £361,074. Our financial position, however, remains strong.

Writing Down Policy.

The reserve fund at the end of the year stood at £2,805,628, which is a reduction of £72,250 on last year's figures. You will see that in conformity with the policy laid down, the amount written off our investments in 1918 is £137,720. This policy of writing down to market price those shareholdings which at the end of the year stand above that value in our books is sound, as also is the practice of never writing up any of our holdings that stand in our books at considerably under the market price. The book value of the company's shareholdings at 31st December, 1918 stood at £3,166,003, the market value being appreciably greater. While some of the higher grade mines of these fields, in which, happily, we possess some interest, are better able to bear the increasingly heavy burdens, many of the lower grade mines, especially those in the near East Central and Western areas, in which are situated our largest interests, are feeling the position most acutely.

Some Comparisons.

A few figures for 1918 as compared with 1917 show very clearly the aggregate effect of increased costs of working on the companies in which we are interested, and which are segregated into the following areas:

FAR EAST RAND—TWO MINES.

	1917.	1918.
Tons mined	1,293,566	1,537,737
Tons milled	1,174,800	1,397,000
Cost per ton milled	20s. 1d.	20s. 5d.
Profit	£1,436,646	£1,631,693

NEAR EASTERN AND CENTRAL.

RAND—THIRTEEN MINES.

	1917.	1918.
Tons mined	10,508,704	9,164,422
Tons milled	9,644,900	8,421,670
Cost per ton milled	19s. 10d.	22s. 8d.
Profit	£3,044,722	£1,552,962

WEST RAND—THREE MINES.

	1917.	1918.
Tons mined	1,332,574	1,303,180
Tons milled	1,210,904	1,127,050
Cost per ton milled	22s.	24s. 10d.
Profit	£216,985	£162,003

You will realise that the enormous addition to working costs in the Near Eastern Central and Western sections of the Rand would be even more significant if the pre-war figures for 1914 were compared with 1918.

Mining Summaries.

Sir Evelyn Wallers gave a survey of the positions of the various companies in which the Rand Mines' chief interests lie.

Bantjes Consolidated Mines, Ltd.—This company suspended operations at the end of November, 1918. Whether it will re-open again at a later date depends largely on the results of the exploratory drive now being put in by the Consolidated Main Reef. When the mine discontinued operations, 95,000 tons of 6.3 dwts. value represented the ore reserve still in the mine.

Brakpan Mines, Ltd.—The tonnage milled for 1918 was 617,100, compared with 677,500 for the previous year. Working profit decreased from £471,172 to £355,798. The yield per ton was 35s. 3.9d. against 34s. 5.9d. for 1917, whilst the working costs rose from 20s. 3d. to 23s. 5d. The payable ore reserve at the end of the year stood at 2,718,000 tons of a value of 8.7 dwts., being a decrease of 550,000 tons and of 0.5 dwt. in value. The dividends paid for the year were 32½ per cent., absorbing £257,107.

City Deep, Ltd.—This company milled 670,100 tons, being approximately 74,000 tons lower than in 1917. Working costs were still further increased to 24s. 8d. per ton, and the working profit including accumulations, was £452,777. The dividend declared for the year amounted to 27½ per cent., compared with 45 per cent. for the year 1917. The ore reserves amounted to 3,342,700, valued at 9.6 dwts., a slight increase in quantity, but an appreciable increase in grade, viz., 6. dwt. The company is in a very satisfactory development position, but future results are dependent upon an adequate supply of native labour.

Consolidated Main Reef Mines and Estate, Ltd.—The company's last financial year ended on the 30th June, 1918. For that year a profit of £151,879 was earned. The average recovery value was 23s. 2d. per ton and the tonnage crushed 539,760 tons (including only nine months of Main Reef West milling) and working costs amounting to 22s. 7d. per ton milled. The acute shortage of native labour has considerably affected the current year's operations. The ore reserves at 30th June, 1918, amounted to 1,25,970 tons of a value of 7.3 dwts. over 53 inches. The company has embarked upon a reorganisation scheme, estimated to cost about £100,000, which, when completed, will result in more efficient and economical working.

Crown Mines, Limited.—The tonnage milled during the year was 1,861,000, nearly a quarter of a million less than in 1917. The yield increased from 25s. 9d. to 27s. 2d., but working costs increased from 19s. 4d. in 1917 to 22s. 9d. in 1918. The dividend paid was 20 per cent. compared with 40 per cent. for the year 1917. We are giving the very closest attention to the affairs of this company, and we hope that, with even a little lightening of some of the war burdens, the company has seen its worst periods. The ore reserves are estimated at 8,298,000 tons, value 6.4

dwts., being a reduction in quantity over 1917, but a slight increase in value.

Daggafontein Mines, Limited.—Development work could not be continued during the year under review owing to water troubles. These have now been overcome and sinking resumed. Sinking is proceeding at No. 2 Shaft.

Durban-Roodepoort Deep, Limited.—This company milled 300,450 tons, compared with 313,850 tons in the previous year. The yield per ton increased from 27s. 9d. per ton to 30s. Working costs also increased from 24s. 8d. to 28s. The working profit was £30,068, or approximately £18,000 less than 1917. A dividend of 2½ per cent. was declared, compared with 5 per cent. for the previous year. The ore reserves are estimated at 1,078,500, value 6.5 dwts., being a slight reduction in quantity, but the same grade as in the previous year.

East Rand Proprietary Mines, Limited.—The tonnage milled was 1,372,300, being a decrease of 369,000 tons over the previous year. Working profit has decreased from £188,951 to £52,916 or 9d. per ton. The yield per ton was 23s. 3d. as against 21s. 11d. for 1917, whilst the working costs have increased from 19s. 9d. to 22s. 6d. The ore reserves at the year end were 2,263,000 tons, of a value of 6.5 dwts., as compared with 2,732,000 tons valued at 6.2 dwts. in the previous year.

Ferreira Deep, Limited.—This company's financial year closed on the 30th September last. The tonnage milled was 508,200, giving an average yield of 31s. 9d. per ton, with working costs at 23s. 5d. per ton. A profit for the year of £211,716 was earned. Two dividends of 7½ per cent. each and two bonuses of 3½ were declared. Compared with the previous year, the profits have decreased by £122,283, and the ore reserves are still further depleted, being now 932,400 tons, value 8.0 dwts., or a decrease of 373,000 tons, and an increase of 0.4 dwt. in value as compared with the previous year. The results for the current year show a profit to the end of May of £96,358, the tonnage milled in this period being 279,990.

Geduld Proprietary Mines, Limited.—The net profit for the year was £220,086, being an improvement of £32,343 on that of the previous year.

Geldenhuis Deep, Limited.—The tonnage milled was 591,000, being approximately 57,000 less than the previous year. The yield per ton was reduced from 23s. 10d. to 23s. 2d., and with working costs increased from 20s. 10d. to 23s. 1d. per ton the margin for profit practically disappeared. The ore reserves are estimated to be 1,549,600 tons, value 5.9 dwts., this being approximately 262,000 tons less, with an increase of 0.1 dwt. on the previous year.

The Modders.

Modderfontein B. Gold Mines, Ltd.—The tonnage milled was 605,500, compared with 517,500 tons in the previous year with an average yield of 9.951 dwts. and with working costs at 19s. 8d. per ton a profit for the year of £658,587 was earned. The dividend paid was 82½ per cent., compared with 85 per cent. for the previous year. The mine is now well equipped, and bids fair to maintain its satisfactory record. The payable ore reserves amount to 3,378,000 tons, valued at 9.2 dwts.

Modderfontein Deep Levels, Limited.—The net profit for the year was £519,701. Dividends totalling 97½ per cent. were declared, as against 85 per cent. for the previous year. This company is in a very satisfactory position.

Modderfontein East, Ltd.—Details of the work done at this property are given in the directors' report. Recent development in the Cloverfield section has shown encouraging results. At the end of April the liability on loan account amounted to approximately £100,000. At a special general meeting of shareholders, held on May 15 last, the ore reserves were slated to consist of 605,000 tons, of a value of 8.3 dwts. over 56 inches.

New Modderfontein Gold Mining Company, Ltd.—This company's financial year ended on June 30, 1918. The tonnage milled was 684,100, being an increase of 28,000 tons on the previous year. Profits have increased to £833,260, both figures being the best to that date in the history of the company. The ore reserves at June 30, 1918, were estimated to be 900,000 tons, value 8.6 dwts. The dividend declared was 40.5-8 per cent. as compared with 32½ per cent. for the previous year.

Other Mines.

Nourse Mines, Ltd.—The working profit for the year ended 30th June, 1918, was £58,180, showing a decrease of £60,692 as compared with the previous year. Results for the first six months of the current financial year have been very seriously affected by the acute shortage of native labour consequent upon the influenza epidemic. Accordingly no dividend for that period was declared.

Robinson Deep, Ltd.—The net profit last year amounted to only £3,121. The reasons for the reduction in working profit which was returned at £34,225 are given in the directors' report.

Robinson G.M. Co., Ltd.—The tonnage milled was 493,700, being 125,000 tons less than the previous year. The working profit decreased from £238,197 in 1917 to £63,785 in the year now under review. Dividends were declared amounting to 2½ per cent., compared with 7½ per cent. for the previous year. The results for the current year to the end of May show a profit of £16,763 from 191,500 tons milled. The Board has just declared a bonus distribution of Bewaarplaatsen moneys amounting to 5 per cent.

Rose Deep, Ltd.—The tonnage milled was 616,900, compared with 685,900 tons milled for the previous year. The yield per ton was 23s., and working costs were 18s. 6d. per ton. It will be seen that the yield has increased by 1s. 5d. per ton and working costs have increased by 1s. 7d. per ton. The working profit for the year is £139,813, being a decrease of approximately £119,000 when compared with the previous year. The dividends paid amounted to 17½ per cent., the dividend paid for the previous year was 30 per cent. The ore reserve was estimated to be 2,909,500 tons, value 5.3 dwts., this being a reduction compared with the previous year of 310,180 tons with 0.1 dwt. less in value.

Springs Mines, Ltd.—The working profit for the year amounted to £415,190, the increase of £156,479 as compared with the result for the previous year being due to the extensions in the reduction plant.

West Springs, Ltd.—At the end of the year the work of sinking two shafts was in the initial stages. The west haulage from the Springs had been advanced 149 feet into the West Springs area.

The Jupiter G.M. Co., Ltd.—The profit for last year was £7,611. Profits previously earned, however, enabled the distribution of a dividend of 1½ per cent., absorbing £12,677. The margin between recovery value of ore treated and the present level of operating costs is so small that any further addition to the latter will render the working of the mine impossible. The first four months of the current year have shown increasing losses month by month.

The Pretoria Portland Cement Co., Ltd.—This Company continues to do well. During the year the company capitalised its reserve fund of £150,000, and made a distribution of the new shares in the form of a bonus to shareholders who received share for share, the capital now standing at £300,000. The demand for the product is well maintained.

The Village Main Reef Gold Mining Company, Limited.—This company milled 265,700 tons, which, with a yield of 29s. 2d. per ton and working costs of 22s. 6d. per ton, gave a working profit of £89,290. This profit is approximately £50,000 less than in the previous year. A dividend was paid amounting to 10 per cent., compared with 20 per cent. for the year 1917. This is another mine that after a very profitable life is nearing its end.

The Wollunter Gold Mines, Limited.—The working profit for the year ended 31st October, 1918, at £78,875 shows a reduction of £60,467 due to shortage of native labour and adverse war conditions. Dividends totalling 6½ per cent. were declared for the year, absorbing £53,750.

Turffontein Estate, Ltd.—This company, now in process of liquidation, sold its property assets to the Robinson Deep, Limited, for 84,000 "P" shares of that company.

Village Deep, Ltd.—Flooding of the main hauling shaft due to abnormal rains, adverse war conditions, the influenza epidemic, and general shortage of native labour caused a reduction of 50,000 tons in the tonnage crushed, as compared with 1917, as well as an increase of 3s. 1d. per ton in working costs; while the yield per ton fell 1s. 8d. As a result the profit was only £66,256—a decrease of £150,789. A dividend of 3½ per cent. was declared in respect of the first half of the year, but owing to the losses incurred during the latter end of the year, no dividend was declared in respect of the second half.

Witbank Colliery, Ltd.—Despatches from the colliery for the year ended 31st August, 1918, totalled 907,738 tons—an increase of 20,407 tons on the previous year. Dividends for the last financial year totalled 27½ per cent., absorbing £57,750. The mine is in a very sound position.

Labour Position.

Dealing with the Labour situation, Sir Evelyn Wallers said the native labour position continued to be very satisfactory. The medical service, under Colonel Orenstein, maintained a high state of efficiency, and there was a marked absence of mortality from causes other than influenza. The mortality due to accidents amongst natives stood at the satisfactory figure of 2.97 per thousand per annum. For the first five months of the current year there had been the usual seasonal improvement in the native labour position, but between now and October or November next there would, no doubt, be the customary seasonal decrease, and the immediate outlook in this respect was not good. It must be clearly realised by everyone with a knowledge of the industry that an efficient and stable supply of native workmen on the mines was a necessity

for the prosperity of the Union, and he had referred before, indeed on many occasions, to the incomprehensible attitude of Parliament in rejecting their repeated suggestions that a certain small number of natives should be brought down from the areas north of latitude 22. This experiment, they felt confident, would have shown, by the inoculation with Dr. Lister's pneumococcal vaccine, that native labourers from those areas would have been able to work here and maintain an altogether satisfactory health condition. The Metallurgical Department continued to give careful attention to its side of the work on the mines. The starting of the new plant at New Modderfontein marked a definite step in advance of any metallurgical practice. The preliminary separation and drying of the fines in the ore sent to the crusher station and the direct treatment of sand in the accumulators had proved completely successful. The electrical and mechanical engineering department, under the control of Mr. Elsdon Dew, was giving close attention to the economical use of air, drills, drill steel, etc. The use of hammer-drills on the mines had proved a great benefit during the periods of shortage of native labour, but it had yet to be proved whether the hammer-drill was a really economical proposition if the native labour complement increases to pre-war figures.

Sir Evelyn Wallers concluded by thanking the staff, and said the workmen on the mines had shown in many ways impossible to enumerate great assistance in suggestions for economies and in other directions during the period of acute shortage of supplies, and to them the company was very grateful. The number of men from the head office and the mines still on active service had been reduced to 569. It was with very great regret, however, that he had to state that the number of employees within their administration who had fallen during the war was 344, and their names would be found on the roll of honour attached to the report of the meeting. To their relatives and friends they expressed respectful sympathy.

The appointment of Sir Harry Ross Skinner and Mr. E. G. Izod, M.B.E., as directors of the company was confirmed, and Sir Evelyn Wallers, K.B.E., and Mr. F. G. C. E. Robellaz were re-elected directors.

CENTRAL MINING.

Presiding at the fourteenth annual meeting of the Central Mining Investment Corporation, Sir Lionel Phillips, dealt with English economic conditions. He said that as long as the distribution of borrowed funds continued the false picture of prosperity, especially in the minds of the less instructed, must prevail and the nation would not be alive to the true situation. The sole foundation of wealth was production. The latter could only be secured by settled conditions. Capital was naturally shy in the face of the indefinite government policy and the continuous Labour unrest. It was necessary to emphasise that the nation had not only sold some of its assets and pledged others, but had also pledged the earnings of the future. Restoration could alone be accomplished by the adoption of a wise policy and by individual industry and economy.

Turning to the balance sheet of the corporation, he said the liability to credit

tors in 1918 showed a decrease of £5,000 to £3,000 sterling, compared with 1917. Contingent liabilities had increased by £291,000, which mainly consisted of capital not called up on new holdings and financial agreements. The holdings in enemy countries had been heavily written down in 1916, and were unaltered. No credit had been taken for interest on coupons during the war. With regard to diamonds the interests in De Beers had been substantially increased.

Diamond Cutting in South Africa.

Referring to the new Bill before the Union Parliament, Sir Lionel Phillips said he quite appreciated the desire to establish a diamond cutting industry in South Africa, but pointed out that the trade in both uncut and cut diamonds was of a special and most complicated nature. Amsterdam, Antwerp, New York and London were the recognised centres of the diamond business. He suggested that the Union Government should proceed slowly in order that the effects of the new proposal might clearly be ascertained before any commitments were entered into. The success of the diamond industry was mainly due to the controlled output and the sale arrangements. He feared that any interference would tend to unsettle the diamond trade and might adversely affect its contribution to the Union Exchequer.

He mentioned that the corporation had recently acquired important interests in metal companies, of which the prospects were favourable.

Referring to the very substantial holding in Trinidad leaseholds he dwelt on the excellence of the prospects of the enterprise and the immense future of the oil industry generally.

Profits for the Year.

After referring to other industrial interests, he stated that the net profits for the year were £397,000. The dividends totalled 10s. per share free of income tax. The board recommended an initial allocation of £10,000 to the staff pensions and benefit fund, that the reserve fund be increased to £450,000, and that £124,000 be carried forward.

Sir Lionel Phillips also referred to taxation, and uttered a warning regarding the burdens which were continually being placed on the South African gold mining industry. He said he feared irrevocable consequences before long.

Native Labour.

After mentioning various mines in which the corporation was interested, Sir Lionel Phillips dealt with the developments in South Africa generally and gold mining in particular. He said the most important problem was that of native labour. The example set by the whites in their frequent demands was gradually spreading to the natives, and serious consequences might be expected to follow the native unrest caused thereby, which would probably be quite different from those which the white agitators were able to foresee. He believed the pre-

sent restrictions imposed upon the native whereby his sphere was circumscribed owing to the colour bar were unjust, and that in the long run they would prove disadvantageous to the white working class. The skilled white, who put his heart into his job, was much superior to the skilled coloured or black, because he was more intelligent, but if he had to face the competition of inferior races he had got to be in reality a skilled tradesman and must use his energy and intelligence. Sir Lionel questioned if it was conceivable in a country with millions of aboriginal inhabitants that they could perpetually be debarred from entering skilled occupations, when in the course of their work they acquired a certain measure of proficiency in branches requiring greater skill. He was surprised that any considerable body of opinion had failed to appreciate the direction whither these artificial restrictions were leading. He believed the development of the country would be enormously restricted if the recruitment of native labour, both within and without the Union were not encouraged.

Consequences of Labour Deficiency.

In consequence of the insufficient labour supply, which was temporarily aggravated by influenza and floods, the ore treated in 1918 by the companies connected with the Central Mining Corporation only represented 71 per cent. of the available capacity of the plants, compared with 81 per cent. in 1917, 91 per cent in 1916 and 92 per cent. in 1915. There had consequently been a decided increase in the working costs and decreased employment of whites, with the resultant smaller distribution of wealth through the country.

Sir Lionel then dealt with the attempts made from time to time to repair the native labour deficiency. The importation of Chinese had been of advantage to the mines, but political considerations had ended the experiment. Subsequently tropical natives were tried, but very rightly this plan was abandoned on account of pneumonia. Great progress had been made since then in combating pneumonia. He referred to the refusal to sanction a farther experiment with tropical natives. Dr. Lister's successful treatment might justify the employment of such labour and solve the native labour difficulties. Continuing, Sir Lionel said South Africa would never make the progress she was capable of until the labour question was tackled on its merits. The poor white problem would be brought much nearer solution by the energetic development of every source of potential wealth than by indulging in the visionary theory that the restriction of native labour enlarged the sphere of labour for white men.

Referring to the prize for the gold output Sir Lionel Phillips acknowledged that but for the Navy the mining industry would have had to close down, but he thought the Inchcape Committee was wrong in saying the industry had no case, although everyone could have sympathised with the view that it was difficult to find an equitable adjustment. He was more than hopeful that arrangements would be come to at no distant date, by which it would be possible to ship the gold to England as hitherto, and at the same time to obtain its full value.

Colonel Ffennell.

Colonel Raymond Ffennell, in seconding, said the financial position in Europe called for care. A scheme for the simplification and adjustment of the mutual external debts of the Allied countries might well receive consideration. A League of Nations, if formed, would then rest upon a sounder financial basis. How far America would meet such a situation was for her to decide. The Government in Britain should work vigorously to encourage thrift. The masses were now earning better wages and should become economical, as in France. Cinema pictures showing the work done in Japanese mills and factories and elsewhere would enable Lancashire and other British manufacturing districts to realise that fresh outside competition had arisen. Broad lines of national Imperial development should be laid down. Colonel Ffennell regretted the lack of constructive and active financial criticism in England. Most of the leaders of banking finance were very silent on the great subjects. He concluded by paying a tribute to the South African troops, declaring that their battlefields would remain immortal.

The reports and accounts were adopted and a final dividend for 1918 of 2s. free of income tax was sanctioned.

MEYER AND CHARLTON.

The annual meeting of shareholders of the Meyer and Charlton G.M. Co., Ltd., was held in the Board Room, General Mining Buildings, on June 26, Sir George Albu presiding. In moving the adoption of the report and balance sheet, the chairman said that although the results from the mining operations of the company for the past financial year had not attained the high-water mark reached for the previous year, they had nevertheless been eminently satisfactory. As will be seen from the audited accounts, the working profit for 1918 amounted to £275,080, and, with the addition of sundry revenue, £13,356, represented a gross profit of £288,436. After allowing for the Union Government's share of profits, i.e., the percentage due in respect of the lease of the undermining rights of the bewaarplaatsen, and income and dividend taxes, amounting in all to £67,008, and providing for £10,480 for the assessment made by the Provincial Council of the Transvaal (an imposition to which I shall make reference later), and for English income tax, miners' phthisis compensation, etc., the available net profit for the year being £205,723. As against this balance, two dividends of 50 per cent. each and a bonus of 10 per cent. had been declared, equivalent to a total distribution of £220,000 for the period in question. To enable this to be done, we had to call to the extent to £14,277 upon the unappropriated profit of £150,780 brought from the previous year, with the result that our carry forward has been reduced to £136,503 as at the commencement of the current year.

The ore milled during last year again showed a considerable decrease—of close upon 27,000 tons—in quantity as compared with the figures for 1917. The reduction was due to the utilisation of a proportion of the ore broken each month in building reef packs for the support of workings in certain parts of the mine. As previously explained, these reef packs will gradually be withdrawn and the ore sent to the mill as the system of sand-filling now in operation progresses.

One effect of the smaller tonnage crushed was to increase the working cost per ton of ore treated, as the standing and overhead charges had necessarily to be spread over a reduced tonnage; there is also the effect of charging to current working costs the expense of breaking ore which is temporarily retained underground for the building of the reef packs. To meet this and other factors, and in order to counterbalance loss of revenue which would otherwise have resulted from the reduced tonnage milled, it had been necessary to raise the grade of the ore going to the mill by mining an increased percentage of Main Reef leader. As a consequence of this temporary policy, the yield for the past year of 66s. per ton, reflected an increase of approximately 9s. per ton as compared with the preceding year. Even on this basis, however, reference to the annual report of the manager shows that the proportion of Main Reef Leader mined and hoisted last year was only 61 per cent. of the total ore hoisted from all sources, equivalent to 70 per cent. of the total ore hoisted from stope faces, as against the 87 per cent. of this rich ore body contained in the ore reserves. It is obvious, therefore, that in raising the grade for the special purposes mentioned, we have been able to maintain our profits on the smaller tonnage crushed without taking an undue proportion of leader. This statement is confirmed by the general position of the ore reserves at the 31st December last, which at 504,496 tons reflect an increase of 11,300 tons; the value, 15.84 dwts. per ton, is close upon 2 dwts. per ton lower than the reserves as calculated at the close of the previous year, but this diminution is accounted for by the fact that the estimated stoping width has been increased from 49.18 inches to 53.6 inches, as the result of actual experience of the widths mined during the past year.

A new item appeared in the Appropriation Account on this occasion in the form of the debit of £10,480 for the estimated amount payable for 1918 under the Transvaal Provincial Gold Profits Tax Ordinance. This assessment was being contested in the courts of law. The finding of the local Supreme Court had been given in favour of the Provincial Council, but the mining companies had appealed against the judgment. He had no hesitation in saying that, whatever the strictly legal aspect of the matter might be, the proposed taxation was absolutely inequitable.

Government and the Mines.

Proceeding, Sir Geo. Albu said it was generally admitted that the gold mining industry had to bear more than its proper share of taxation before the war; yet, shortly after the outbreak of hostilities, the Union Government imposed an additional tax or war levy of 5 per cent. on profits, which is still in operation, and which, although described as war taxation, is to continue in a modified degree in perpetuity. It is, to say the least of it, questionable whether as a matter of fairness the gold mining companies should have been mulcted in this manner, because during the whole of the war period, and, indeed, up to the present time, we have paid heavily increased prices for all stores and supplies, substantial war bonuses to white employees, active service allowances to our men at the front—increasing the working expenditure to an extent that has more or less crippled all but the higher grade mines—and yet, so far from being

able to pass on this additional expenditure by adding it to the price of our product, we have actually received less for our gold than in pre-war times. The one consolation—such as it was—that we appeared to have, until last year, was the almost universal understanding that taxation of the gold mining industry was the prerogative of the Union Parliament alone, and that we were free from attacks from other bodies. Nevertheless, the Provincial Council of the Transvaal imposed this new taxation on the mines, and the Union Government decided not to exercise its right of vetoing the Ordinance. But this is not all; although the feeling of the members of the Government, and apparently the general body of members of the House, is that the Financial Relations Act should be so amended as to prevent Provincial Councils trespassing on the preserves of the Union Parliament for the future, the Acting Prime Minister has declined to bring in the necessary legislation during the present session. This, of course, means that, in the event of the appeal lodged by the mining companies (against the recent decision of the Court in favour of the Provincial Council) being unsuccessful, we shall be mulcted for at least another year in this iniquitous taxation. One would think that even if the public as a whole was ignorant of the extreme seriousness of the outlook for the mining industry, the Government, which has all along been fully advised of the position, would have had sufficient foresight and common sense to prevent these excessive burdens being placed on us, and, if necessary, to have educated the House of Assembly on the question of the extreme unwisdom of crippling an industry already struggling with adversity, and yet, at the same time, the greatest contributor, directly and indirectly, to the revenue of the State.

Regarding the operations of the mine since the close of the financial year, Sir George proceeded to say that the results for the five months to the end of May showed a total working profit of £110,000, equal to a monthly average of £22,000. It was anticipated that the earnings for the current month would be on a similar level, and a dividend for the current half year of 50 per cent. had therefore been declared, representing a distribution of £100,000. He was pleased to be able to point to the gradual increase in the tonnage milled during the last three months, and to state that so far from this having been effected by mining an additional quantity of main reef leader from the reserves, it had resulted from the reclamation of ore from old and caved-in workings. In fact, the contribution of between 3,000 and 4,000 tons of payable rock from reclamation sources had enabled the mine actually to decrease the percentage of ore previously being taken from leader stopes. He mentioned these facts because they indicated the conservation of a corresponding tonnage of the richer ore reserves, and thereby acted as a factor in prolonging the life of this most successful mine.

In conclusion, Sir George said: The majority of the company's employees who went on active service have now returned and resumed their duties on the property. The only fresh casualty I have to record is in the case of Private Stanley Oliver, who, I am sorry to say, has lost a leg as the result of a wound received so late as the 18th November last.

It was with regret that, in September last, we received an intimation from Mr. H. G. Nitch that he had decided to give up mining, and tendering his resignation

as from the end of that month. Mr. Nitch had occupied the position of manager of your mine for many years to our entire satisfaction, and I desire to take this opportunity of expressing our great appreciation of the loyalty and ability with which he at all times carried out his duties. Mr. H. Johnston was appointed to fill the vacancy, and I am very pleased to be able to testify to his energetic and very capable work, especially in the direction of reclamation, since taking over the management.

Mr. Pratt seconded, and the report was adopted.

The retiring directors, Messrs. Leopold Abu and Arthur French, were re-elected, and Mr. F. W. Diamond and Messrs. C. L. Andersson and Co. were appointed the company's Auditors for the current year.

NEW GOCH GOLD MINES.

Presiding at the annual meeting of shareholders of the New Goch G.M., Ltd., in General Mining Buildings, on Thursday, June 26, Sir George Albu said: At the preceding annual meeting the Chairman referred to the approaching exhaustion of the mine and the extreme difficulty, in view of the increased level of working costs due to the war and the decreased number of working faces available, of earning even nominal profits. He indicated the probability that we could not, during the remainder of the year, do more than make the revenue balance the expenditure, and, as you will see from the accounts before you, this prediction has been practically fulfilled. The actual working loss for the year was £6,622, which was reduced to £627 by the additional revenue accruing from rents, commissions, etc. After providing for taxes and miners' phthisis compensation, there was a net loss for the period of £2,258, which was deducted from the credit balance of £73,485 brought from the previous year, leaving a carry forward of unappropriated profit to the current year of £71,227. As will be seen, however, by reference to the balance sheet, these funds were not available for distribution, as they had been either expended in or earmarked for the purpose of the development of the claims leased by the company from the City Deep, Ltd. For instance, £12,885 had been spent in the development of those claims, and £3,981 was the company's proportion of the cost of the new winding engine installed at the 4a subsidiary shaft for working that area. Then they had £27,128 locked up in stores on hand, and £10,362 in the shape of sundry debtors, payments in advance, furniture, etc. As regarded gold in transit and cash on hand, amounting together to £41,988, sundry creditors and the other liabilities shown in the balance sheet would absorb £23,689, and the balance of £18,300 was reserved for the further development of the leased claims, on which for the most part the future of the company depended. The decreased recovery of just under 19s. per ton for the past year was scarcely surprising, bearing in mind the relatively low proportion of ore which it was possible to obtain from the stope faces, and the fact that a large proportion of the ore mined had to be drawn from the low grade, although cheaply worked, main reef situated in the footwall of the main reef leader stopes. If it were possible to increase the proportion of ore drawn from the main reef leader, which was the principal gold producer of the mine, it was likely that some improvement in the grade would materialise and with this object in view, every effort was being made to expedite de-

velopment in the area leased from the City Deep, Ltd. So far, approximately 46,000 tons of payable main reef leader had been developed in this ground, in addition to a very fair tonnage of main reef, for which adequate information in regard to value was not yet available. The average grade indicated for the main reef leader was 6.9 dwts., which was a distinct improvement on the value of this reef in the lower levels of the old Goch mine. This ore, however, was situated in the eastern portion of the City Deep claims, in the area served by the 4a subsidiary shaft, and but little information was as yet available regarding the central and western portions of the block. Under normal conditions by actively continuing development to the west of the 4a shaft and from the new 4b shaft, by the end of this year the block would be tested at sufficient points to enable the company to frame a fair estimate of its value, and in addition, since a gradually increasing number of stope faces on the main reef leader would become available, the chances of returning to a moderate profit-earning basis would be increased. This policy up till recently had the support of the board, but unfortunately the provisions of the new Miners' Phthisis Act threatened to be the last straw and to remove all hope of reverting to profitable conditions. They are therefore forced to revise their views in regard to the future of the mine, and seriously to consider the suspension of underground operations in the near future. By so doing, they would avoid the possibility of running into debt, since they would be able to compound their liability under the new Phthisis Act, by payment of an amount equal to three-sevenths of the contributions under the old Act during the past seven years. This was a step which, naturally, would be undertaken only after the most careful consideration and with the greatest possible reluctance, the more so since it would not only entail increasing the unemployment already prevailing, but also necessitate the abandonment of the area leased from the City Deep, Ltd., before adequate information was available regarding its possibilities. Under present conditions, however, with the new burden which had been added to those already existing, and in view of the relatively small cash resources at the disposal of the company, it seemed almost inevitable. Although a number of the employees who joined up for service in connection with the war have now returned, 18 of our men are still away, including Private E. M. Cella, who was so unfortunate as to be wounded twice last year within a period of three months. I am sure you will join with me in wishing him a complete recovery, and also a safe home-coming to the men still absent. I have much pleasure in expressing your Board's and my personal appreciation of the valuable services rendered to the Company by your Manager, Mr. G. G. Holmes, during the past year.

Mr. H. W. Dalton seconded, and the report was adopted. The retiring directors, Messrs. J. Freudenthal and Leonold Abu, were re-elected. The auditors, Messrs. Douglas, Low and Co., were reappointed.

ROODEPOORT UNITED MAIN REEF.

Presiding over the annual meeting of shareholders of the Roodepoort United Main Reef G.M. Co., Ltd., on Thursday, the 26th day of June, 1919, Sir George Abu said that the increasingly serious position of the Company was fully dealt with in the remarks from

the Chair at the previous Annual Meeting a year ago, and regretted that the results from mining operations since that date had shown no improvement. They had worked on at a steady loss, varying from a minimum of £1,000 to a maximum of £7,240 reached for October last year, whilst the influenza epidemic was at its worst stage. Consequently the report and accounts for the past year were of a depressing character. The working loss for that period, as shown by the Profit and Loss Account, was £34,176, reduced by the application of sundry revenue to £27,481. To this, however, must be added interest on loans, £24,500, and miners' phthisis compensation £1,147, making a net loss for the year of £53,125. As a consequence it was necessary from time to time to obtain additional loans from the General Mining and Finance Corporation, Ltd., with the result that the company's liability for advances increased from the amount of £318,459, appearing in the previous accounts, to the figure of £362,150 shown in the Balance Sheet as at 31st December last. As a matter of fact the loan account would have reached a still higher figure but for the sale of old buildings and obsolete plant which realised £9,924, and the decrease of £4,695 in stores on hand. As compared with the results obtained during 1917, the ore crushed at 286,313 tons showed a decrease of 70,800 tons; the revenue from the ore milled was less by 8d. per ton, and working costs, by reason of the smaller scale of operations and the increased burden of war conditions, were higher by 2s. 8d. The reduction in tonnage was due largely to the shortage of native labour which prevailed throughout the year; and the fall in grade, which had become even more accentuated since the commencement of the present year, was the result of the exhaustion of certain high grade stope faces in the Kimberley main section, and the absence of other faces of similar grade to replace them, owing to the relatively small ore reserve, of only 223,410 tons, which existed at the close of the year. Apart from the reasons given in the manager's report, the reduction of the ore reserve is caused by the underground pumping difficulties, following on the abnormal floods that took place during February of last year, and the increased volume of water which had had to be handled since that time, not only from this mine but also from the underground workings of the Vogelstruis Estates property, which overflowed into the Roodepoort United during the year.

Not only does this represent a serious increase in the cost of pumping, but, in addition, the pumping equipment, which was not designed for such a large volume of water, was incapable of dealing with the extra flow and as a consequence shaft sinking and the opening out of new levels was rendered impossible, and development in the lowest existing levels was seriously impeded. Under these circumstances, stopes became exhausted before other faces could be opened up. An attempt was made to procure additional pumping plant locally—without success—and eventually, after considerable delay, a new pump was procured from England. This pump arrived only last month and is now erected at the 14th level, and running satisfactorily. The relief which has thus been afforded has enabled us to resume the work of cutting a pump station at the 20th level, which had been suspended owing to water difficulties for over a year, and also to re-start shaft sinking and development on the 20th and 21st levels. As a result, for the first time for more than twelve months the ore developed

last month exceeded that drawn from reserves, to the extent of 3,754 tons—a figure which should be improved upon as the subsidiary shaft had reached the plane of the 22nd level. In the meantime, in order to avoid a serious drop in tonnage, which would have entailed a far heavier loss than had actually been incurred, the old No. 3 and United sections of the mine have been reopened, and were now producing on a moderate scale. The ore obtained from these sections was not of high grade, but was mined at a low cost as compared with that obtained from the stope faces.

Why the Mine Continued.

It might be a matter of surprise, in view of the results obtained during the year and of the warning conveyed in the Chairman's speech at the last annual meeting, that the mine has continued operations, particularly since the recovery in recent months had fallen as low as 17s. 3d., and the average recovery for the period January to May, 1919, inclusive, had been only 18s. 7d. The directors had been influenced by the view that the present grade did not represent what would be expected if development were sufficiently advanced to enable them to increase the proportion of ore drawn from stope faces; further, by the satisfactory values of development in the lower levels of the Kimberley main section; and, finally, with the hope that the termination of the war would bring a general improvement in working conditions, which would make it possible to continue, without raising further loans, until normal times returned. If and so long as this were possible, it would be most undesirable to close down, especially with such a large area of the property unproved and intact. Unfortunately, however, recent events might necessitate a change of policy in this direction. The new Miners' Phthisis Compensation Act would entail a greatly increased contribution from the company, and while he sympathised very sincerely with the sufferers from this dread disease, and felt that every reasonable effort should be made to assist them and alleviate their suffering, it seemed to him that the Government, representing the community as a whole who benefited to such an extent from the mines, should pay out at any rate a proportion of the heavy extra cost. As matters were, it might prove to be an additional burden, which, added to the almost overwhelming nature of those the mine was already called upon to bear, might be more than the mine could stand, in which case a suspension of operations would be inevitable. Such a step, naturally, would have the most careful consideration of the board before being finally decided upon. Apart from the fact that it would increase the unemployment already prevailing and bring distress to a large number of employees, to close down the mine now, after weathering the war period, would be a bitter disappointment, and tantamount to condemning the very large area of intact ground belonging to the company. In the meantime, therefore, they were simply holding on. The position was critical—with this increased taxation and the unsympathetic attitude of the Government generally, even more critical than last year, and while they were more than anxious to continue operations until brighter days came, it might be found, unless relief in some direction was forthcoming in the near future, that before the next annual meeting a suspension of operations might have been forced upon them.

The number of the company's employees still on active service has been reduced to 22, most of the remainder having returned and resumed work on the property.

Mr. L. P. de Castle resigned the management of the mine early in September last, and Mr. J. L. van Eyssen was then appointed to the position. The chairman expressed the board's appreciation of the excellent work performed by Mr. van Eyssen in the face of the most difficult and discouraging conditions, and the results of which, for reasons entirely beyond his control, unfortunately have not so far been reflected in any degree by the returns from the mine.

Mr. V. J. Ronketti seconded, and the report was adopted.

The retiring directors, Messrs. H. Newhouse and Arthur French, were re-elected, and Mr. A. Eckart-Beckmann and Messrs. Ferryman & Goldby were appointed the company's auditors for the current year.

WEST RAND CONSOLIDATED.

In moving the adoption of the directors' report and the balance sheet at the annual meeting of shareholders of the West Rand Consolidated Mines, Ltd., on Thursday, the 26th June, Sir George Albu, Bart., the Chairman of the Company, said: I think a perusal of the reports and accounts for the past year gives a very clear idea of the trials and difficulties which have been experienced in the course of the mining operations on your Company's property. There was a small increase of 1s. per ton in the average recovery value of the ore milled, and this represented the only favourable feature of the returns from the mine for the period. Per contra, the ore milled showed a decrease of approximately 33,000 tons, and the working costs reflected an increase of close upon 3s. per ton. It was not surprising, therefore, that the result of the year's operations was a working loss of £7,548. This deficit, after taking credit for £17,709 in the shape of additional revenue, and after providing, on the other hand, for interest on debentures, trustees' fees, taxes, and miners' phthisis compensation (amounting together to £24,051) was increased to a net loss for the year of £13,890. The causes leading up to this unfortunate result were of a varying nature. Perhaps the leading factors were the very heavy increase in the price of stores and supplies, and the additions to the war bonus paid to white workmen, which, together, were mainly responsible for the appreciable rise in working expenditure. Over and above this, the exceptionally heavy floods experienced in the early part of the year increased the flow of water in the underground workings to an extent which necessitated running the entire pumping plant full time, without possibility of stoppages for repairs, in order to avoid flooding the lower pump stations. This inevitably led to breakdowns, which, coupled with the extra power consumed for handling the large volume of water, inflated our pumping costs to an abnormal degree, quite apart from the heavy cost of baling with the skips, to save the load on the pumping plant, which not only further increased our expenditure on handling water, but also restricted the tonnage of ore hoisted from the mine. To complete our troubles, the outbreak of Spanish influenza in the latter part of September, which spread rapidly amongst both white and native employees, thoroughly disorganised working conditions, and, with its after effects on recruiting, affected operations for the last three months of the year to such an extent that they resulted in an aggregate working loss of nearly £9,000. There is an interesting and significant paragraph

towards the close of the Manager's report for the past year to which I desire to draw your attention. In dealing with the matter of the increased working costs, he points out that the additional costs as compared with 1917, amounted to £11,230 for stores, £4,572 for war bonus to white employees, and £14,016 for pumping. This makes a total of £29,819—a very appreciable item—but the point to be borne in mind is that it only represents the extra cost as between 1918 and 1917: naturally, the additional cost under two of these heads of expenditure (stores and wages) as compared with pre-war conditions is very considerably in excess of the figures given. With regard to pumping costs, the increase of £14,016 in this connection gives some idea of the strenuous and constant struggle to keep the water in check, and this feature is emphasised by the figures, also given in the Manager's Report, of the quantity of water dealt with, i.e., 503 million gallons of water pumped from the mine and 48 millions baled with skips, or a total of 551 million gallons of water raised from the mine for the 12 months. To put it in another way, this means that for each ton of ore milled we have had to pump and bale rather over seven tons of water. It is almost unnecessary for me to say that such a huge volume of water was never anticipated when the original pumping plants for the mine were designed and installed, and that the additions which we were able to make during the year were necessarily of a makeshift character. So long as the war was raging, it was impossible to remedy the position by obtaining the requisite more powerful pumping plant from Europe, but I am glad to say that we have recently been able to place orders for all the equipment required for the installation of a big central pumping scheme, which will not only be capable of dealing successfully with the existing water troubles in the Main Reef Section, but also contain a substantial margin of capacity for coping with an increased quantity. This will enable us to connect with the underground workings in the claims acquired from the Lancaster West Company, and thus open up the promising area, east of the east shaft, development of which, owing to the inadequacy of the existing pumping plant, cannot be undertaken at the present time.

I have already indicated the effect of the water troubles in the direction of restricting mining operations, especially in the Rand Shaft, owing to the constantly recurring necessity for using the skips for baling water instead of hoisting ore. This, however, was not the only or the greatest disability. Owing to the heavy influx of water, the lower levels were continually flooded, with the result that shaft sinking was suspended throughout the year. Consequently, it was impossible to prosecute development and open up the projected new levels—altogether, so far as the ground commanded by the lower sections of the East and West Shafts is concerned, and to a certain extent in the instance of the Rand Shaft. This naturally prevented the accomplishment of our desire to increase the ore reserves, and, moreover, delayed the opening up of new and additional stone faces which would have enabled us to keep the mill more fully supplied with rock than has been possible under the actual circumstances. It will be seen, therefore, that the consequences of the water troubles were indeed of a far-reaching character, and have had a more disastrous influence on the operations of the mine than would at first sight appear. As regards the present position, an additional pump has been installed in the Rand Shaft, which would effectually hold the water until such time as it may be advisable definitely to consider the application of the cementation process of the main underground water fissure; in the

case of the Main Reef section, a temporary installation had been arranged, pending completion of the permanent pumping scheme, which, however, since practically the whole plant had to be imported from Europe, would not be in operation for another 12 months. In the meantime, the temporary equipment which was being installed should very considerably lessen the troubles which had been experienced during the past 18 months, and, after the lower levels of the west shaft had been unwatered, it might be possible to carry out a limited footage of shaft sinking at this point and to resume development operations. In regard to the prospects for the remainder of the year, it should be practicable, within the next few months, to increase the tonnage drawn from the Rand Shaft section of the mine, and, since the grade of the ore developed in this section was of more than average value, some improvement upon recent results could be anticipated, even under present conditions in regard to the supply of native labour. Still later, as shaft sinking and development advance in the Main Reef section and additional stope faces became available for attack, there was every reason to expect, providing the grade met with in the eastern and central portions of the property continued in depth, that the mine would emerge from its present position, into which it had been driven by the overwhelming disabilities consequent upon the war, and be placed on a profit-earning basis more commensurate with its size and great potentialities.

There are still 24 of the Company's white employees away on active service, and I regret to say that since the last annual meeting two of our men (Lance-Corporal F. S. McGowan and Private A. L. Fanning) have given up their lives while serving our cause. We wish to extend to their relatives our sincere sympathy in the loss they have suffered.

In conclusion, it gives me much pleasure to pay tribute on behalf of the Board to the conscientious and able manner in which your manager, Mr. G. D. Stephen, has carried out the arduous duties devolving upon him.

Mr. G. C. Fitzpatrick seconded, and the report was adopted.

The retiring Directors, Messrs. Leopold Albu and G. S. Goldman, were re-elected, and Mr. E. Danckwerts and Messrs. Ferryman and Goldby were appointed the Company's Auditors for the current year.

CINDERELLA CONSOLIDATED.

Presiding at the annual general meeting of shareholders, held in the Board Room, General Mining Buildings, Johannesburg, on Friday, the 27th of June, Sir George Albu, Bart., the chairman of the company, in moving the adopting of the report and accounts, said:—

Gentlemen.—The profit and loss account for the past year gives a total expenditure of £10,783, of which £8,352 represents the upkeep of the company's title and property, in the shape of licences and maintenance of the plant and machinery. The revenue from rents, interest, etc., amounted to £6,664, thus leaving a net expenditure for the year of £4,119, or £4,249 after including debenture trustees' fees and English income tax. The balance to the debt of appropriation account at the 31st December last was £93,736, which is more than accounted for by the liability of £126,041 to debenture holders in respect of interest due since the 1st June, 1914, payment of which is deferred for a period expiring twelve months after the signing of peace with Germany. Notwithstanding the cost of maintaining the company's fixed assets already referred to, the actual cash position shows an improvement of £7,194, as compared with the

close of the previous year. This is due to the realisation of certain assets, chiefly of £1,805 for stores, £4,829 for plant and machinery, and £1,135 for investments sold. We were thus enabled to carry forward a cash balance to the current year of £18,727. I find it somewhat difficult to discuss the outlook for your company in the direction of an early resuscitation from its present inactive condition. We are as desirous as ever of seeing the property reopened and active operations progressing, but the existing high level of working costs, and the ever-increasing burdens of taxation which the Government of this country in its wisdom sees fit to place upon the gold mining industry, have the inevitable tendency towards making it a more and more formidable problem to obtain the large amount of money required to resume and continue shaft sinking and development work on the mine on an adequate scale. That some day we shall be able to do this is my firm conviction, but the length of the period that may elapse in the meantime is a matter on which it is futile at the present moment to venture an opinion. In support of my view, I may remind you that during the period of milling operations, i.e., between the years 1908 and 1913, the company crushed 875,276 tons of ore, yielding gold to the value of £1,220,546, equal to an average recovery of £1 8s. per ton, and I may also point out that by far the greater portion of our extensive mining area is intact. With the demand for gold that exists at present and is likely to continue for years to come, it is unreasonable to suppose that a property with such a record will remain closed down much longer simply for the want of working capital.

Mr. G. Imroth seconded, and the report was adopted.

The retiring directors, Messrs. J. Minuro and Leopold Albu, were re-elected, as were likewise the auditors, Messrs. Douglas, Low & Co.

AURORA WEST UNITED.

Speaking at the ordinary general meeting of the Aurora West United G.M. Co., Ltd., on June 27, Sir George Albu said: The reports and accounts of the company for the past year gave a practical illustration of the difficulties with which the lower grade mines had had to contend during the last two years of the war, and which, unfortunately, were still in front of them. Mining operations were severely affected by the big floods in February of last year, the consequences of which were, in one way or another, experienced for many subsequent months owing to the abnormal quantity of water met with underground. To these difficulties were added the shortage and inefficiency of native labour resulting from the influenza epidemic towards the end of September, and the after effects for several succeeding months, which, piled on to the abnormally high cost of stores and wages, and other special expenditure due to war conditions, rendered it impossible for the time being to work at a profit. Those factors accounted for the reduction of the working profit for 1917 of £43,519 to the merely nominal profit of £1,395 shown in the profit and loss account for the past year. From causes which he had just mentioned, the ore hoisted showed a reduction of 30,000 tons, and the ore milled 18,700 tons, as compared with the previous year, the difference between these two figures being accounted for by the decreased percentage of rock sorted out for 1918. This necessarily made for a diminished total revenue, which was accentuated by the fall of approximate-

ly 1s. 6d. per ton in the value of the ore crushed. Working costs, at 22 3s. per ton for the year, reflected an increase of over 3s., which, as pointed out in the report of the manager, was attributable to the standing charge having to be distributed over the smaller tonnage milled, and to the considerable additional advance in the price of stores and white labour, to which I have already alluded. The decrease in the ore reserves, as compared with the position at the close of the previous year, is referred to and explained in the report of your directors. I may, perhaps, add that the water troubles in February had the effect, amongst other disabilities, of so flooding the lower sections of the mine that shaft sinking was rendered impossible for the remainder of the year, as, owing to the war, it was impossible to obtain the new and additional pumps required to cope with the position. This naturally delayed the prosecution of development in the lower levels, and so prevented the opening up of the area in the south-eastern portion of the mine which, from all indications available, is likely to prove of higher average grade than the existing ore reserves, and the mining of which, had it been possible, would have considerably improved the position during the latter part of last year, and for this year also. It is hoped, however, that shaft sinking will shortly be resumed, as suitable pumps have since been purchased, and the excavation of the pump chamber at the 13th level has now been almost completed.

With regard to the results of mining operations since the close of the past financial year, they could only be described as disappointing. The connecting up of the Bantjes Air Compressing Station with the Aurora shaft, and the introduction of a large number of drilling machines of the "jack-hammer" type, referred to in the manager's annual report, was effected in the early part of this year, but the benefit of the increased tonnage mined during the past three months has been largely counteracted by the higher scale of working costs and the drop in the recovery value of the ore milled. The drop in recovery is disappointing in view of the reduction in stoping width which has been effected by the jack-hammers, but it has been brought about, to a certain extent, by overmining the high grade ore in the upper levels, now becoming exhausted, in the effort to compensate for the ever-increasing cost of supplies and labour which has taken place since the commencement of the war.

For the first four months of this year the yield was only about 20s. per ton, which was hopelessly inadequate with costs at their present high level. Last month the yield improved to 22s. 6d., with the result that the revenue earned showed, for the first time in eight months, a nominal margin over working expenditure. Unfortunately, this improvement was not to be extended to the current month, since, on the morning on the 20th, a serious breakdown of the mill engine took place, as the result of which milling operations were suspended altogether for two days, and at the present time it is possible to run only 45 stamps. Every effort was being made to repair the damage at the earliest possible moment; but it was unlikely they would be able to resume crushing with the full mill before the middle of July. In consequence, the operations for June and July would result in a substantial loss.

In regard to the future, it appeared evident that although, from time to time, the grade might take a turn for the better, no marked improvement upon present results could be anticipated until development in the south-eastern portion of the mine had progressed to a greater extent.

That is the position so far as we can gauge it, and so far as the limitations of our present outlook justify us in taking a new view. I admit that it is not a very encouraging prospect, but it is the cumulative effect of endeavouring to keep going and earn profits during five years of constantly increasing difficulties and disabilities, the bulk of which are due directly to the effects of the war. Under normal or pre-war conditions, we should have earned a substantial profit last year, and larger profits in the preceding three years than the satisfactory figures actually recorded for those periods, with the result that to-day the company would not only have been free from debt, but have already entered the dividend-paying stage. As it is, the liability of your company to the General Mining and Finance Corporation, Ltd., which had been reduced to the comparatively insignificant figure of £9,000 shown in the balance sheet at the 31st December last, has, by reason of the working losses sustained during the current year and the provision of the funds required for the larger pumping scheme and the installation of the jack-hammer machines, risen to £32,000 at the present moment. Although I am hopeful that we shall succeed in working off this liability out of future profits, it must not be forgotten that the period during which profits are either non-existent or of small dimensions is nevertheless a slice off the life of the mine which can never be recovered.

"In the case of this company," said Sir George, "as, unfortunately, in the instance of many others along the Reef, the mine has been for the past year, and is at the present time, being run without any benefit to shareholders, but with substantial benefit to the employees and the community. There must, however, be a limit to this procedure, and the limit in our case will be reached if and when we find we have no reasonable prospect of reaching and maintaining profit-earning conditions. I trust that it will be some years hence before we are obliged to arrive at such a conclusion; but I am bound to sound a warning note that it may equally well be in the very near future. Much depends upon the results of the mining and development operations during the next six months.

"Since the conclusion of active hostilities most of your company's employees who were on active service have returned to their various positions on the mine, and I am very glad that on this occasion there are no further casualties to report.

"In bringing my remarks to a close, I wish on behalf of the board to voice appreciation of the services rendered by your manager, Mr. J. K. Digby, who has carried out his duties with energy and ability in the face of great difficulties."

Mr. H. W. Dalton seconded, and the report was adopted.

The retiring directors, Messrs. Leopold Albu and Arthur French, were re-elected, as were likewise the auditors, Messrs. Fraser and McKenzie and Ferryman and Goldby.

RAND COLLIERIES, LTD.

Presiding at the annual meeting of the Rand Collieries on Friday, June 27, Sir George Albu, Bart., the Chairman of the Company, in moving the adoption of the report and accounts, said: The only matter in the accounts for the past year which calls for comment is the reduction of the company's liability to the General Mining and Finance Corporation, Limited, from £203,250 at the close of the previous year to £190,001 as appearing in the balance sheet at December 31 last. This was effected

by the sale during the year of certain plant and machinery—at prices which should more than cover the cost of replacement in the event of it being required at a later date. The close proximity of their property, which was freehold, to a number of producing mines, such as Springs, Brakpan, and Government Areas, and to others which are in a state of development, might make it desirable to consider the advisability of laying out a township of considerable magnitude on their farm. Besides which, the greater portion of the ground was coal-bearing, and the coal rights of the adjoining portion of the farm Witpoort also belonged entirely to your company. I admit that the calorific value of this coal does not come up to the standard of the coal generally used at the present moment, but the nearness of the deposits to the above-named large mining areas, and the railway facilities with town, may make it quite possible to work them profitably in the future. I have nothing to report in regard to the possibility of a recommencement of active operations on the property. In the existing unsettled state of political and industrial matters in Europe, it is impracticable to make any effective move in the direction of re-constructing and re-financing the Company. At a later date, however, when times are more normal, I hope it will be possible to do so.

Mr. Arthur French seconded, and the report was adopted.

The retiring directors, Messrs. Leopold Albu and Arthur French, were re-elected, as were likewise the auditors, Messrs. Fraser and Mackenzie.

NEW STEYN ESTATE.

Speaking at the annual meeting of the New Steyn Estate Gold Mines, Limited, on Friday, 27th ult., Sir George Albu said the accounts for the past year showed that the expenditure (the larger proportion of which is represented by claim licences and mynpacht rents) amounted to £4,621, as against a total revenue from interest, owner's half share of licences, etc., of £3,079, leaving a balance, representing net loss, of £1,542. This had been deducted from the credit balance on appropriation account of £52,110 brought forward from the previous year, leaving the balance of unappropriated profit in the balance sheet at £50,567. Leaving out of account the company's investments, the excess of liquid assets over current liabilities amounted to £52,632, which is fully represented by cash at bank. As indicated by the remarks from the chair at recent annual meetings, it would appear that the ultimate destination of the extensive mining area held by our company will be its incorporation with the ground of one of the producing mines at present working on our northern and eastern boundaries. The money required for shaft sinking and preliminary development in deep-level claims such as are held by us would alone amount to several hundred thousands of pounds, and it would be exceedingly difficult, even under ordinary circumstances, to raise these funds. Recent legislation in the Union Parliament, however, has placed such very heavy additional burdens on the producing mines of the Witwatersrand that the provision of funds to work the New Steyn ground as a separate proposition has become practically impossible. During the 30 years in which I have been intimately connected with the mining industry, it has been my unvarying experience that the gold mines were the milch cow for the Government of the Transvaal, for taxation purposes both of a direct and indirect character. Never have we experienced any

relief in this respect—the only change has been in the direction of piling on fresh burdens. During the past four or five years we have, in addition, represented the final resting place of all the increased cost of materials, and of most of the increased cost of the necessities of life, due to the war, which have been automatically and cheerfully passed on for us to bear, as though our cash resources were inexhaustible. It has been left to the Union Parliament to administer what looks like being the "coup-de-grace" not only to many existing producing mines, but also to the other propositions at present dormant, which previously possessed distinct possibilities of eventually becoming active producers, for the benefit not alone of shareholders, but still more so of the general community. In view of the serious position, well known to the Government, at all events, if not to Parliament generally, of the gold mining industry, it seems incomprehensible that ministers should have consented to the imposition of the crushing burdens which have been placed on it by the enactments of the session just concluded. We are constantly assured of the sympathy of ministers, and especially by the Acting Prime Minister, and their desire to help us: is it not farcical that at the same time bills are brought in and passed, amidst the cheers of the House, making it more and more impossible for the lower grade mines (on the operations of which the stability of the community largely rests) to make both ends meet? And as a finale, and to show his "sympathy" in a practical form, the Acting Prime Minister appoints a Commission to enquire into the position of the mines—after having done his best to endanger their continued existence. Now that the mischief has been done, we observe that the members of Parliament representing Rand constituencies are beginning also to take a "sympathetic" interest in our troubles: the natural question one is tempted to ask is—why, at this late hour of the day? and why call in the physician after having bled the poor patient to death? The mining industry has from its earliest days been the shuttlecock of party politicians, and it seems to me that the time has now arrived, so far as the Reef is concerned, for choosing and electing men as our members in Parliament for the express purpose of directly representing the industry and its requirements—men who will not belong to any of the existing political parties, but will wholeheartedly watch over the interests of the mines, and, in so doing, also safeguard the vital interests of the community of the Rand.

Mr. Arthur French seconded, and the report was adopted.

The retiring directors, Messrs. Leopold Albu and Arthur French, were re-elected, as were likewise the auditors, Messrs. Douglas, Low & Co.

SACKE ESTATES.

Presiding at the annual meeting of Sacke Estates and Mining Company, Limited, on Friday, June 27, Sir George Albu, Bart., the Chairman of the Company, in moving the adoption of the report and accounts, said: The profit and loss account of the company for the past financial year showed that the total revenue was £2,374; administration expenses amounted to £1,127, leaving a net profit for the period of £1,247. The excess of liquid assets over liabilities at December 31 last was £67,556, the increase in this connection over the corresponding figure at the close of the previous year being due to the profit earned for 1918. Investments, which were taken at or under Stock Exchange

prices at the end of the year, stood at the same figure as in the previous balance sheet. There had been no change in the individual holdings, as for the most part these consisted of shares and debentures in mines for the time being dormant, and in respect of which, therefore, the Stock Exchange quotations were merely nominal. In their opinion, these holdings should be retained until more normal times arrive, when it should be possible to dispose of them at better advantage than at present.

Mr. Arthur French seconded, and the report was adopted.

The retiring Directors, Messrs. Arthur French and H. W. Dalton, were re-elected, as were likewise the Auditors, Messrs. Douglas, Low and Co., and A. Eckart-Beckmann.

AFRICAN LANDS.

At the annual meeting of the African Land and Investment Company, Lieut.-Colonel Leslie Brown, in moving the adoption of the report of the directors and statement of accounts, said that the revenue derived from rents and licences showed a decrease of £1,476, due to sale of certain rent-producing properties. Dividends on investments increased by £4,037, that being very largely due to the receipt of the accumulated arrear preference dividends from the American Trona Corporation. Sundry revenue showed a slight improvement of £208, due almost entirely to an increase in the amount received by way of insurance commission. A profit of £2,712 was made on realisation of some of the company's share investments, due to the sale of 200 African Banking Corporation shares and 90 American Trona Corporation shares. The total income from all sources was £20,572 as against £15,167 for the preceding year, or an increase of £5,405. On the other side it would be noticed that maintenance, including rates and licences on properties, amounted to £6,011 as against £5,650, the increase being largely due to the continued upward tendency of municipal taxation. For the current year the assessment was 7d. in the £ on site values only, improvements again being untaxed, and, as the managing director pointed out in his report, the Johannesburg Municipality was endeavouring to obtain administrative sanction to increase the statutory limit of 7d. in the £. In conjunction with other land owners they had protested against such methods of rating, and would continue to press for a more equitable division of the burden of municipal taxation. As to the reconditioning of their properties, they would notice that last year they spent £2,569 as compared with £424 the previous year. At the last annual meeting the chairman explained the writing off of £8,128 in the previous year's accounts in respect of "loss on fixed property realised." They had again followed the same policy, and, as shown in the accounts, they had written off £8,852 for the past year. The payment of £10,000 for debenture interest for the year ended 31st March was duly provided for. The net result of the year's operations showed a loss of £9,482, which amount had been carried to the balance sheet, making the total debit to income and expenditure account £26,373. It was gal to say that the revenue producing properties were all in good condition and well let, and every effort was being made to keep expenditure as low as possible.

Plantations.

Reverting to the matter of the plantations, they would see from the reports that the total number of trees they had planted to date exceeded 1,000,000, and, when their planting programme was completed, they would have some 1,200,000 trees, comprising different varieties, all of which would be suitable for the country's needs. In a few years' time that asset should prove of immense value, as the available sources of indigenous timber continued to be heavily drawn upon, and forests were being gradually denuded,

so that very shortly South Africa's requirements would have to be supplied from plantations and from overseas. Consequently, as Mr. Smits so rightly pointed out, their plantations would increase in value from year to year, and would, when cutting commences, provide a steady and continuous source of income, while cost of maintenance would be comparatively small. They would notice that the arrear cumulative dividends on the preference shares now amounted to the large figure of £116,250. He could only reiterate what the chairman stated last year, namely, that they thought there

was reason to be more hopeful as regarded the future, provided that taxation by provincial and municipal administrations was not unduly and alarmingly increased; and that in course of time the company's position would improve, which, however, could only come about gradually by realising properties when favourable opportunities occur and re-investing in more profitable business—a policy that they were adhering to as far as possible.

Mr. Rossiter seconded the motion, which was carried unanimously, and the retiring directors were re-elected.

S.A. Railways and Harbours: Notice to Contractors.

The South African Railways and Harbours invite tenders for the supply of a steel framed building for the new steel foundry at Pretoria, about 210 feet long by 150 feet broad, complete, including structural steel and iron work, gutters and down pipes and fittings, glazing and windows, doors, galvanised iron sheeting, etc. Tenders close on July 21.

THE NATIONAL BANK OF SOUTH AFRICA, LIMITED.

PAYMENT OF DIVIDEND.

NOTICE IS HEREBY GIVEN that a Dividend of Six per cent. per annum, plus a bonus of one per cent., has been declared for the year ended 31st March, 1919. The Interim Dividend declared in October last absorbed six shillings per share, leaving eight shillings per share for the final distribution.

The Dividend and Bonus will be payable to Shareholders registered in the Books of the Company as at the close of business on 23rd May, 1919, and to holders of Coupon 41 attached to Share Warrants to Bearer.

Warrants will be despatched to South African Registered Shareholders from Pretoria, and to European Shareholders from London Office, on or about 26th instant.

Holders of Share Warrants to Bearer are informed that Coupons may be deposited at any of the Bank's Branches, and will, upon verification by the Head Office, be paid on or after 26th instant.

By Order of the Board of Directors,

C. P. MATHEWS, Secretary.

Pretoria, 25th June, 1919.

National Industrial Corporation of Africa.

The National Industrial Corporation of Africa, Ltd., has been incorporated on the initiation of the National Bank of South Africa, Ltd., with a view to finance and foster industrial undertakings in Africa, and will specially devote itself to the encouragement of industrial enterprise by means of financial aid and otherwise, as may seem desirable. The Corporation is prepared to provide financial assistance to approved concerns in the form of long-dated loans and by subscribing capital, repayment of which may be extended over a longer period than is usually conceded by bankers. Ample scope exists for the creation and extension of industrial enterprises in Africa, and where the raw material is available, financial assistance and technical guidance should enable a substantial manufacturing industry to be set up. These functions will be performed by the Corporation. It is believed that much success can be achieved by close co-ordination between industrial and commercial undertakings, and while the Corporation will lend its aid to further this object, it is not intended that it shall itself act as a competing contractor, merchant, trader, or banker. The Corporation has at its disposal the accumulated business experience of a strong Board of Directors, and a staff capable of investigating and advising on technical questions arising out of business proposals submitted to it. The Corporation thus will prepare the way for linking up the industrialist with the investor. The Corporation has the goodwill of the Government of the Union of South Africa. The Corporation has purchased the whole of the shares of the Industrial Development Company, Ltd., recently started with an issued capital of £100,000, all fully paid up, and has thus acquired the control of the business which will be merged in that of the Corporation, and will form an excellent nucleus for the commencement of operations.

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GAS, ELECTRIC SUPPLY AND TRAMWAYS DEPARTMENT.

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Telephone 3612.

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All the above prices are f.o.r. Gas Works Siding, Johannesburg

All Cheques payable to Town Treasurer.

Country Cheques must include exchange.

THE S.A. Mining AND Engineering Journal

WITH WHICH IS INCORPORATED

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NOTICE.—The postage of this issue of the *S.A. Mining and Engineering Journal* is: South Africa, 1½d. All other parts, 2d.

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Notes and News.

Heidelberg Borings.

It is understood that diamond drilling operations on Eendracht, Boschhoek and the Heidelberg town lands have been suspended. Work is, however, being continued on Tulipvale by Houtpoort, Ltd.

* * * *

Roberts Victor Diamonds.

In connection with the note appearing in our last issue on this property, it has been represented to us that the re-opening of this property will require the expenditure of a considerable sum of money and that it should not therefore be too hastily assumed that the revival of the mine is pending in the immediate future.

* * * *

Vaal River Possibilities.

The South African Association for the Advancement of Science has been holding its annual meeting at Kingwilliamstown and East London this week. The presidential address in Section "A" was delivered by Mr. W. Ingham, M.Inst.C.E., M.I.Mech.E., on the Possibilities of the Vaal River. We hope to print Mr. Ingham's address in an early issue.

* * * *

Crown Diamonds.

Arrangements are now practically complete for the commencement of washing at this property, and it is anticipated that the gear will be put into operation on Monday. The plant has not, however, been in use for some years and will have to be reconditioned before it is in proper working order. For this purpose tailings and rubbish will be put through the washing plant for the first day or two. By the end of next week, however, the company should be engaged in washing the new blue and all indications point in the direction of profitable results being secured.

* * * *

Frank Smith Diamonds.

We learn that the Frank Smith Diamond Mine will be re-opened very shortly. The company holds the whole of the Frank Smith mine of 533 claims and also 41,051 acres of freehold land in close vicinity to the mine. The blue ground available above the 200 feet level amounts to 2,000,000 loads and the company possesses a washing plant with a capacity of 4,000 loads per day. For the last twelve months of working the yield averaged approximately four carats per load. The stones are of excellent quality and the outlook for the company has of course improved greatly in view of the present great demand for diamonds.

* * * *

Alcohol and Industry.

A report on "The alcohol question as it relates to industries," submitted to the Rand Mutual Assurance Co., Ltd., by Colonel Orenstein (Superintendent of Sanitation) contains, amongst other carefully prepared facts, the following: "The congresses held in Europe have become more and more important, until the last one at The Hague in 1911 was one of the great scientific events of Europe. Among the opponents, on scientific grounds, of the use of alcohol, are some of the brightest intellects in the scientific world of all the countries of Europe. The list of signatures attached to the famous international appeal addressed to the United States on behalf of the threatened Maine prohibition law reads like a directory of famous scientists of Europe. The position in both Europe and America is: That the consumption of alcohol is inimical to industrial efficiency. That the consumption of alcohol must be combatted by intelligent effort on the part of employers of labour. That this effort can be exercised most efficiently in two directions: (a) education of the working-men and the public in general; (b) substitution of non-alcoholic drinks having a stimulating and nutritive value."

The Aero Union.

Under the auspices of the scientific and technical societies of the Rand, the Aero Union announces that Major Court-Treatt, R.A.F., will deliver a lecture on flying on July 30 at the School of Mines. Major Court-Treatt is in charge of No. 3 Survey Party of the Cape-to-Cairo flight which is being promoted by the Air Board; and his lecture promises to be of great scientific and general interest.

* * * *

The Half-Year's Gold Output.

The gold output for June was declared on Thursday at 702,379 ozs., of a value of £2,983,515. This shows a decrease of 22,616 ozs., and a decreased value of £96,068 as compared with May of this year. The decrease may be put down to the shorter month. The outside districts showed an increase of 939 ozs., of a value of £3,981. The output for the half-year was of a value of £17,617,391, and compares with £18,079,762 for the first six months of last year, or a decrease in value of £462,371.

* * * *

Irrigation to Replace Mining.

In the course of an interesting letter to the daily papers Professor Schwarz writes: "I have read a good deal of literature lately on the question of the Witwatersrand, and I have heard many people express the opinion that its days as a wealth-distributing centre are numbered, but such ideas have recurred periodically and the Witwatersrand has hitherto always risen superior to them; there is certainly no justification for such pessimism at the present time. When I first came to the Rand in 1895, a petition, signed by several influential people, was sent to President Kruger, asking that I should be appointed Government Geologist, to make an exhaustive survey of the Witwatersrand; the reply came that the Government could not entertain the idea as I could not understand Dutch. Subsequently, Dr. Molengraaff was appointed to the position; but up to this day a complete survey of the Witwatersrand has not been made, and there are still surprises in store, I do not say as necessarily the outcome of a purely scientific survey, but following from a survey joined with mining enterprise. Supposing, however, that the Witwatersrand mines gave out completely and the population had to seek other means of livelihood, I would suggest that the pessimists should consider my Kalahari scheme before thinking that it was necessary to migrate to other parts of the world. In my paper read in Johannesburg last year, I dealt only with the scientific aspect of the scheme; but what it amounts to is, that I was offering affluence to anyone who wanted it."

* * * *

The Gold Market.

The bluff served up by the Incheape Commission has now been "called"; and London is waking up to the fact that the Rand intends to get a better, if not the best, price for its product. According to Reuter, the *Times* City edition refers to a telegram from its Capetown correspondent stating that reports are current that the British Treasury and the Bank of England oppose the Union Government's decision to treat the whole of the South African gold output at Pretoria, and that the London representatives of the mining industry are adopting a view antagonistic to the Chamber of Mines and the Union Government by favourably regarding the draft agreement submitted by the Bank of England for the continuance of the arrangement for the despatch of South African gold to England, except what is required for coinage purposes. The *Times* correspondent in Capetown, in advancing reasons against this, referred to the financial advantages Australian gold producers obtain over the Rand in realisation. The *Times* City edition expresses the opinion that some misunderstanding appears to exist in South Africa on the question. The suggestion of antagonism on the part of the London mining representatives is declared to be quite contrary to the actual facts of the situation. It is fully realised in London (he says) that the matter is essentially one which can only be settled by the agreement of all

parties interested, and that the proposals at present being considered have been submitted to South Africa with that express object. After all, the main point for consideration is which course will give the South African producer the highest price for his gold. The *Times* understands that the proposals now put forward are regarded by high financial authorities as best calculated to achieve that end.

* * * *

Natal Navigation Dividend.

In dealing with the dividend declaration of the Natal Navigation Collieries in our issue of June 28 it was incorrectly stated that there had been a decline of 3d. in the declaration for the half-year. As a fact, a dividend of 9d., plus a bonus of 3d., was declared for both periods.

* * * *

Explosives Combine Dividend.

The dividend of 45 per cent. announced in our last issue as having been paid by the explosives combine, known as Explosives Trades, Ltd., should have been 9 per cent. and not 45 per cent. as stated. The latter figure came from our London correspondent, and certainly did seem extraordinarily high in the circumstances.

* * * *

Housing the Scientific Societies.

Good progress is being made with the scheme for the joint housing of the scientific societies; and the S.A. Association for the Advancement of Science is the latest body to signify its adherence. At the last meeting of the South African Institute of Electrical Engineers Professor Dobson expressed himself opposed to any scheme that might postpone the raising of the funds for the University buildings, and at his suggestion the whole question was held over for fuller discussion at a future date. The difficulty is that appeals to the public-spirited liberality of friends of the Rand are being made simultaneously by the scientific societies and by the promoters of the University scheme; and it is feared by Professor Dobson and those who think with him that the latter may suffer in consequence. Should the appeal of the scientific societies fail for the large capital sum required to erect their own building, it has been suggested that they should approach the Chamber of Mines people, who might be persuaded to add a few more storeys to their projected building in Holland Street, which could be rented to the societies for a fair return on the capital expended. The suggestion, at any rate, seems worthy of consideration.

* * * *

Glynn's Lydenburg Position.

At Glynn's Lydenburg in the quarter ended April 30, development operations in Compound Hill were gradually increased and pushed forward as fast as possible. Three shifts are now being run on all the principal drives. No. 3 South has advanced 192 feet during the quarter, and is still in good ground and on fair lode. Drives are being put off from each side of this drive, and it is hoped shortly to have three faces going southward which will give a frontage of 640 feet between the outside drives. A power line is being erected from the mill to Compound Hill Mine (a distance of about a mile), the power being needed for pumps and ventilation. The opening up of the Werf Mynpacht is still continuing. The floods and stoppage of the mine through the influenza epidemic had caused most of the drives to be completely blocked up by falls of ground, all of which have to be re-opened. It will take some months before any fresh development work can be started. The position is improving daily and water is decreasing, but this mine is still seriously handicapped for stoping faces. The following is the tonnage mined from the different sections during the quarter: Mill Hill, 4,061 tons; Compound Hill, 4,558 tons; Werf Mynpacht, 2,276 tons; total, 10,895 tons. The work of re-timbering the Osborn shaft has been started. The pump chamber near the bottom has been reached, and it is hoped soon to resume sinking operations. The water has now receded to below the pump chambers. During the quarter natives came in fairly freely, but the quality leaves much to be desired. They seem far inferior to those employed prior to the influenza. White labour is also not up to its former standard of efficiency.

TOPICS OF THE WEEK.

THE LOW GRADE MINES COMMISSION.

If the Low-Grade Mines Commission does not succeed in securing some tangible and expeditious result, the fault will certainly not lie with the representatives of the industry, who have given such very candid evidence during the week. Most of us were inclined to be sceptical of the value of yet another enquiry into facts that have been worn well-nigh threadbare in the past few years, and dubious of any practical result. In regard to the first point, however, it would seem that the choice of one of the mines—the Simmer Deep—actually on the verge of closing down, has had the effect of evoking evidence at once more direct and downright than any heard before. Mr. C. D. Leslie, the consulting engineer to the Gold Fields group, which controls the mine, bore the brunt of the first day's enquiry; and he gave his evidence with such sincerity and candour as to compel conviction. In regard to white labour inefficiency he certainly did not mince matters. That twenty-five per cent. of the white labour force is ineffective and guilty of slacking on the job and affecting the rest by their bad example, he made very clear. And the fact of shorter hours of labour, he showed, had been productive of not more and better work, as is held to be the experience elsewhere, but of less and worse work all round. He told the labour representatives on the Commission some plain, if unpalatable, home truths about the effect of white labour discontent on the industry, and he admitted in examination that the removal of the colour bar could not but make for increased efficiency on the part of the native worker. These views of Mr. Leslie's are now comparatively well known. He gave eloquent expression to them the other day in his valedictory address to the South African Institution of Engineers, and he has supported them by figures in his annual reports. It is a new fact, however, that he was able to silence, if not convince, his labour interrogators, and to remain unshaken in public cross-examination regarding his views. It is no mere coincidence that Mr. Leslie should show himself so familiar at once with the special and general difficulties that beset the low-grade mines of the Rand. It has been his mournful privilege to have in his charge more of the low-grade mines than have any other of the leading technical advisers of the Rand. And if he seems occasionally to be impatient of concessions to white labour, the thankless nature of his task under present-day conditions must in fairness be taken into account. In one direction certainly his evidence promises to bear good fruit: The absurd and artificial restriction on the recruiting of natives from north of the arbitrary line of 22 degrees south will now assuredly be abolished. Nothing could have been better than the brief, direct and businesslike way in which Mr. Birkenruth, the managing director of the "Goldfields," capped and rounded off the case for State assistance to the Simmer Deep. Mr. Birkenruth said that all the information at his disposal tended to show that whatever the recommendations of the Commission might eventually be, any form of relief might be unavailing to prevent the closing down of certain mines unless it were granted temporarily at an early date. He referred more particularly to mines whose working costs had been affected (temporarily, it was hoped) by the increased cost of stores and war levy and for some time it was feared, by the increased cost of labour and by direct and indirect taxation, to such an extent as to indicate the probability of their having to be closed down in the near future, in which case they were not likely to be re-opened. He therefore urged very strongly that immediate and direct financial aid be given by the Government to the low-grade mines that can be shown to be most in need of it. He concluded by recommending that, if granted, the financial assistance should take the following form: (a) Advances against monthly requisitions to cover losses, if any; (b) advances to enable mine development to proceed according to the requirements of the mine as per the Government Mining Engineer's certificate; (c) mines which reach the profit-earning stage to repay the advances received on easy

terms. Mr. Birkenruth explained that he had purposely framed his suggestion very briefly and tentatively as the main question at issue was whether the Commission could see its way to recommend the principle involved by means of an emergency interim report. Obviously the terms and conditions outlined were capable of being elaborated and improved upon. For ourselves, we have nothing but praise for the courage and directness of Mr. Birkenruth's remedy. Doubtless we shall be soon told that it sins against all the canons of sound State finance. But the times are out of joint, and abnormal measures are required to meet abnormal needs. The bold step proposed by Mr. Birkenruth is the right thing, and the wise thing, and the only thing left for the Government to do if the low-grade mines are still to be saved!

Koodoo Diamonds.

The Koodoo Diamond Syndicate in its last washing secured 22 carats from 66 loads of ground washed, which works out at 33 carats per 100 loads. The diamonds are of good quality and have been valued at £8 per carat. The work of proving the mine is proceeding satisfactorily. Negotiations are now in progress with a company which, when brought to a satisfactory conclusion, will result in a substantial share bonus to Koodoo shareholders on the basis of an equal distribution both for subscribers' and vendors' shares. Negotiations are also proceeding for the acquisition of another property on which yellow ground and diamonds have been found and when these negotiations are concluded the property will be transferred to the Koodoo Syndicate. The finances of this syndicate are in a satisfactory state, practically the whole of the original working capital still being available.

* * * *

Directors' Activity.

The latest lists of joint stock company directors show that with the big advance in companies registered there has been a notable expansion in pluralism. In 1914 the number of those holding twenty or more appointments was only 27, as against 23 in the previous year and 17 in 1912. Now the number has jumped to 45—an unparalleled figure. The principal holders known to us on this side are as follows:—E. Davis, 52; J. S. Latham, 41; H. Cunliffe-Owen, 36; Viscountess Rhondda, 33; C. F. Rowsell, 31; Col. Sir Arthur Churchman, 25; Sir Evelyn Wallers, 25; I. Lewis, 24; S. Joel, 22; T. J. Milner, 22; Lord Inchcape, 21; Sir Owen Philipps, 21; Sir Oswald Stoll, 21. Ten of those in the 1914 hierarchy reappear in the present list and Mr. E. Davis still leads, having increased his own number from 36 to 52. Viscountess Rhondda inherits most of her father's directorates.

* * * *

Cam and Motor Reconstruction Scheme.

An extraordinary general meeting of the Cam and Motor Gold Mining Company has been held to consider a scheme of reconstruction. It is proposed to form a new company to take over the whole of the assets and liabilities of the present company, the shareholders in the present company to have the right to an allotment in the new company of shares of £1 each equal to their respective holdings, on which 12s. 6d. per share will be paid up, leaving a liability to those exercising their rights of 7s. 6d. per share, payable as to 6d. per share on application, 1s. per share on allotment and the remainder by instalments of 1s. per share at intervals of two calendar months. The issue has been underwritten by the Anglo-American-Rhodesian Exploration Company for a commission of 10 per cent. It is stated that "the consent of the Treasury has been obtained, and the scheme will be proceeded with at once. The new company, in view of the issue having been guaranteed, will be able to clear off the whole of the debentures and other creditors, and will have, after paying off all liabilities, some £65,000 available for working capital for carrying on the company's operations."

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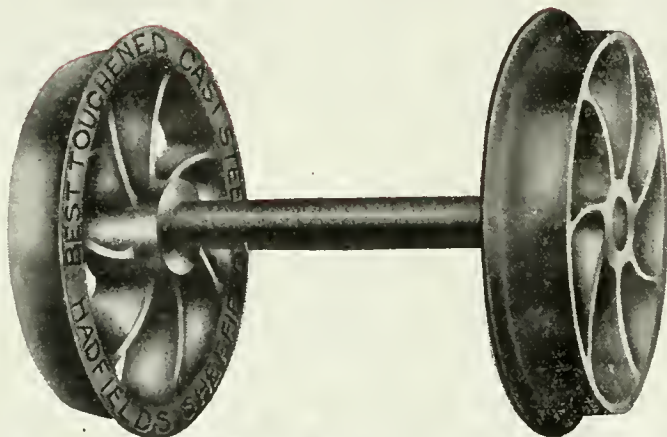
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MODDER DEEP LEVELS.

Strength of the Shares—Company Earning 11 per cent. per Month—June's Record Profit—Excellent Development Position—The Mine and its Neighbours.

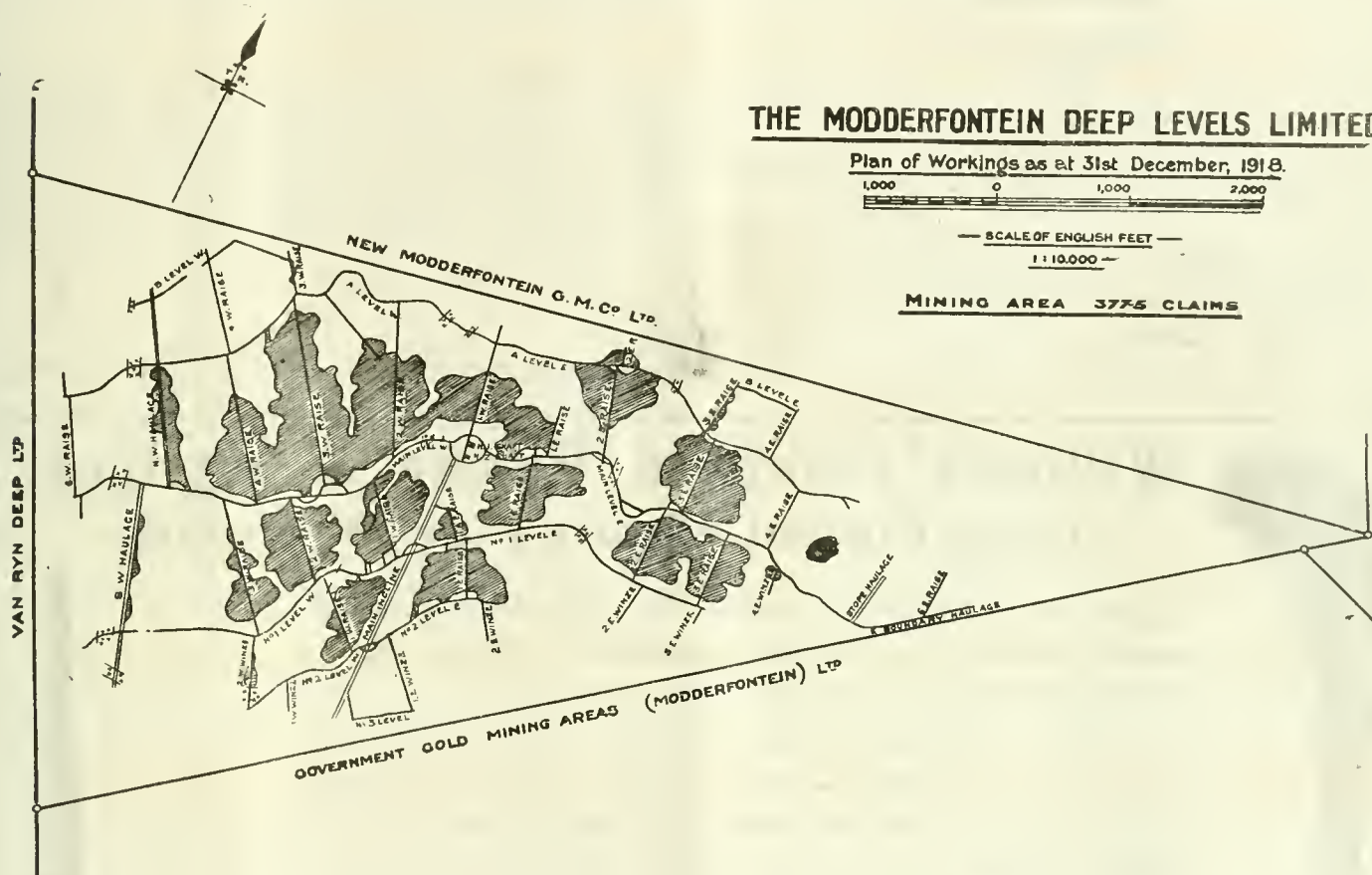
In a dull market for the big gold stocks one of the features of recent dealings has been the strength of Modder Deep shares, which at the moment of writing are quoted at 154s. 6d. ex dividend. This activity and strength is not to be wondered at in view of the situation of the property in regard to other established Far East Rand ventures, the development position obtaining in the mine and the most recent profit-earning achievements of the company.

THE MODDER DEEP'S SITUATION.

The Modderfontein Deep Levels property consists of 377.5 claims which constitute a property shaped as an isosceles triangle, of which the base is bounded by the Van

RESULTS TO DATE.

The Modder Deep Levels commenced crushing in 1915, and up to the end of last year the mine had milled 1,844,500 tons of ore for a working revenue of £3,529,882, or 38s. 3d. per ton, and a working profit of £1,980,420 (21s. 5d. per ton). Working expenditure absorbed £1,549,642, or 16s. 10d. per ton; the net profit was £1,714,106, and the dividends amounted to £1,425,000, or 28s. per cent. on a capital of half-a-million sterling. Since the conclusion of last year the company has achieved even better results as the following table clearly shows:



Ryn Deep, the northern side by the New Modderfontein, and the southern side by the Government, whilst the Apex of this triangle is in the New Modder-Modder B. Government Areas angle. Few other mining ventures in the world can boast of such prosperous and fashionable neighbours as the Modder Deep. Its situation establishes the value of its claim area from end to end, and apart from extraneous factors such as strikes, political changes and varying phases of taxation, it is scarcely conceivable that anything can adversely affect the profits of this wonderfully prosperous mine.

UNDERGROUND WORKINGS.

The accompanying plan denotes the development position of the company and shows how favourably situated the area is in regard to other rich zones of the Far East Rand.

ORE RESERVES.

The ore reserve position is of great strength. At the end of last year the developed ore reserves were 3,450,000 tons of an average assay value of 8.8 dwts. per ton over a stoping width of 78 inches. This tonnage represents about 6½ years' supply for the mill.

MODDER DEEP.

Capital: £500,000.

Ore Reserves: 3,450,000 tons 8.8 dwts. Dividends, 1918: 97½ p.c. 1919: 50 p.c.

		Revenue.		Cost.	Profit.	
1918.	Tons.	£	s. d.	s. d.	£	s. d.
December	10,900	84,577	41 0	18 0	47,515	23 3
1919.						
January	44,100	88,888	40 0	16 11	51,013	23 0
February	39,700	83,128	41 11	10 "	47,118	23 9
March	42,800	89,100	41 8	17 7	51,154	23 11
April	41,100	89,245	43 5	18 1	51,818	25 3
May	44,200	93,170	42 2	17 7	53,955	24 5
June	41,500	93,473	45 1	18 2	55,771	26 11

A RECORD EARNING.

It is noteworthy that last month's profit of £55,771 was the highest earned in the history of the company, and on the registered capital involved represents a return of eleven per cent. per month. Dividend No. 9 for the half-year ended with June 30, 1919, at the rate of fifty per cent. (10s. per share) has just been declared, payable to shareholders registered at the close of business on Monday, 30th June, 1919, and also in respect of the shares allocated in connection with the offer of enemy shares recently purchased

from the Custodian of Enemy Property for the Union of South Africa. Of this dividend, a portion equivalent to 6s. 7½d. per share will be paid in the form of one share in the company for every twenty shares held, and the balance of 3s. 4½d. per share will be paid in cash. The shares to be thus distributed will be provided out of those purchased from the Custodian at £6 12s. 6d. per share, and are calculated at that price. Fractions of shares accruing to shareholders in respect of this dividend will be realised for the benefit of the shareholders concerned. The shares distributed will rank for dividend as from 1st July, 1919.

SPLITTING THE SHARES.

It will be obvious from the foregoing facts that few mines are in a more favoured position than the Modder Deep Levels, and there can be no doubt whatsoever as to this company's ability to earn large profits for a number of years to come. The shares, as has already been remarked in this journal, are being subdivided into shares of a nominal value of 5s. each, and as such will shortly appear on the market.

PERSONAL.

Mr. A. J. B. Cohen is visiting the Rand and Rhodesia after an absence of some years.

Mr. S. C. Mosel has been appointed Buyer and Controller of Stores to the Central Mining/Rand Mines Group.

Mr. R. E. Griggs, who rendered such excellent service by representing the Rand mining industry in New York during the war, has returned to the States.

Interest attaches to the present visit to Rhodesia of His Grace the Duke of Abercorn. A director of the British South Africa Company, and son of the Company's first President, His Grace was already well known to South Africans and is evidently keenly interested in the people and progress of Charterland.

We very much regret to have to chronicle the sudden death this week of Mr. E. W. Buxton, formerly of the *Star*, and at one time on the staff of this paper. The deceased gentleman succumbed to heart failure, and his funeral, which took place on Wednesday, was attended by many representative mining men.

Captain Headlam, R.N., who has been Chief Naval Transport Officer at Durban for the whole South and East Coast of Africa for the past five years, and has had in that capacity a great deal to do with the purchase of South African coal for the Admiralty, passed through Johannesburg this week on his way to England. Captain Headlam recently received the C.M.G. in recognition of his valuable services.

It is officially announced that General C. F. Birney, Royal Engineers, has been appointed General Manager of the Rhodesian Railways. General Birney, who is only slightly over 40 years of age, has a valuable record as a railway official in India. When war broke out he at once left for Europe with the first Indian contingent. He has since held military railway commands in France, where, promoted Major in October, 1914, he rose to his present rank. It is expected that he will arrive in Rhodesia in November.



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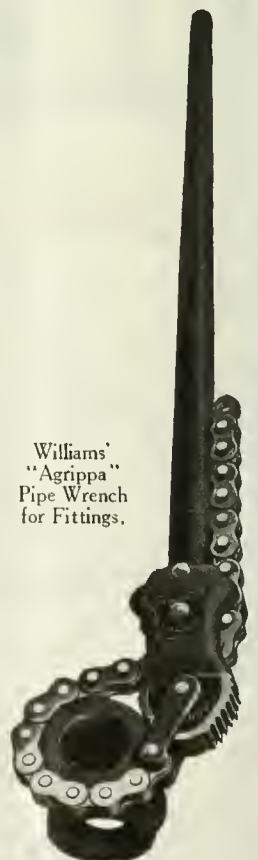
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ACTIVITY ON THE WEST RAND.

Re-Opening of the Teutonia Section—Success of Small Workers—East Champ d'Or Syndicate and the Humphreys Claims—Two Batteries Crushing—What the "House" Thought of the French Rand—The Teutonia Claims Neglected—High Values and Low Working Costs—Possibilities of the Tudor—Encouraging Borehole Results—A Revival of Interest in the Luipaardsvlei Area—"The Stone which the Builders Rejected"—Working Alluvial on the West Rand.

For some years past the West Rand has been more or less discredited, both locally and in London.

A STUDY IN CONTRASTS.

Whilst the Far East section of the fields has risen to almost unparalleled heights of prosperity and activity, the West Rand has been steadily declining in gold-winning and profit-earning achievements and in public esteem. In the area lying to the west and south-west of Roodepoort, that is to say, beyond the area of the great Witpoortje break, several properties have closed down within the past few years and only two or three mines are now working at a profit. As to the larger concerns, in not a single instance are the shares quoted at par, and what were prosperous mining localities a few years ago are now mere hamlets of depression. The burden of war costs seems for the time to have set a seal of pessimism upon the whole West Rand area, and the contrast between the busy and ever-increasing hive of industry to the east of Benoni is in marked and grim contrast to the untenanted cottages, idle shafts and deserted dump heaps of the other end of the fields.

A REVIVAL OF INTEREST.

Nevertheless it is a long lane that has no turning, and there are signs to-day that the West Rand is not altogether forgotten; there are, in fact, indications that interest in the banket beds which lie beyond Roodepoort is being slowly but surely re-awakened. In our last few issues we have referred to the improved outlook at Randfontein and also to the prospect of a revival of the Western Rand Estates properties. Furthermore, it should be noted that the Luipaardsvlei Company is now securing better results. Other indications of a return of interest in this area are to be found nearer Johannesburg in the work which is now being carried out by syndicates and individuals in the vicinity of Luipaardsvlei.

THE DAY OF THE SMALL MEN.

Here the rock from the French Rand dump is being picked over and the sweepings around the old Champ d'Or mill are being re-treated with, it is understood, satisfactory results. By far and away the most important work of all is, however, being conducted by the East Champ d'Or Syndicate and Mr. Humphreys on the old Teutonia section of the French Rand to the north of the Tudor property. The East Champ d'Or Syndicate has a capital of £10,000 and acquired 16 claims on this section of the Rand some time ago. Active operations were commenced about eight or nine months ago, and in February of this year milling was started. To the east of this property are the claims pegged by Mr. Humphreys, upon which a mill is at work, the stamps having been dropped a few days ago.

A LITTLE PAST HISTORY.

In order properly to appreciate the positions obtaining at these ventures, it will be necessary to go over a little past history of this section of the Witwatersrand. A good many years ago the French Rand G.M. Co. acquired the Teutonia claims for one hundred thousand pounds, but instead of developing this section of their property the management appears to have become impressed with the results secured by the Champ d'Or mine to the west and concentrated activity upon the claims in immediate proximity to the Champ d'Or ground. It is probable that by that action the French Rand greatly hastened the end of its profitable life for the values secured on the middle and western portions of the property were poor, and after a few years the French Rand suspended operations and passed into the hands of

the liquidators. In this portion of the Witwatersrand fields the gold appears to occur in the form of lenses along horizontal planes of enrichment as distinct from chutes containing concentration of value along vertical planes on the Far East Rand. An examination of the old French Rand assay plans discloses excellent values in the deeper levels of the old Teutonia section, particularly on the South Reef. A study of these plans seems to indicate that in depth the South Reef is enriched and the Main Reef impoverished.

AUTHORITATIVE APPRECIATION OF THE FRENCH RAND.

Fifteen years ago the whole of this section of the Witwatersrand was held in much higher esteem than it is to-day. The French Rand, for example, was considered to be one of the finest propositions on the Witwatersrand. So Mr. R. W. Ffennell (then Mr. R. W. Schumacher) thought at any rate, for it is worth while recording that on March 22nd, 1904, Mr. Schumacher, presiding at the seventh ordinary general meeting of the shareholders in this company, remarked: "We have an enormous property, consisting of approximately 529 claims, of which 424 are mineralised, and of these only a comparatively insignificant portion has so far been developed. It is therefore reasonable to assume that as conditions improve we may be running with one of the largest mills on the fields, and the profits that we earn will naturally be more or less in proportion to the stamping power. When we shall be able to work on these large lines that I now foreshadow cannot be stated to-day. An immense amount of development work will be done first in order to open up the mine and enable us to form our plans with a tolerable amount of certainty. In the meanwhile we must work hard, and, as I said before, prepare the way for bigger things. It is my sincere conviction, and this conviction is shared by all who know the property, that there are few mines on these fields that present greater promises for the future, when working under favourable conditions, than the one in which you are shareholders." At that time French Rand shares were standing at well over £3, and at the end of 1903 the payable ore reserves of the company were 380,751 tons, of which 290,436 tons in the central portion of the mine were worth 10-13 dwts. per ton. In 1906 this company managed to earn a profit of £50,657 with a 120 stamp mill in operation and with costs at 23s. 10d. per ton. But subsequently poorer results were secured and the property was closed down and subsequently liquidated. It is of very considerable interest to note the following statement contained in the old records of the company: "The richest portion of the French Rand is in the old Teutonia section, a fact regarded as of considerable promise to the Tudor Company, lying south of that section."

THE TUDOR'S PROSPECTS.

The Tudor is another property which has sunk into obscurity. Many people appear to imagine that the Tudor like the French Rand long ago passed into the hands of the liquidators. In point of fact this is quite an erroneous notion. The Tudor Company holds its claims intact; it has a substantial cash balance and practically no liabilities. Moreover, boreholes gave encouraging values, and in view of recent discoveries in the outcrop areas of this section the Tudor may yet become a fairly important mine. The last balance sheet and report of the company (for the year ended with December, 1918) submitted to shareholders at the annual meeting held in Johannesburg on April 22 last showed that the company had an issued capital of £340,000, with liabilities amounting to £50 19s. 1d., whilst cash and other liquid assets had a value of £8,652 3s. 3d. At this meeting Mr. Newhouse presided and remarked: "The capital of the company remains unaltered. The property

consists of: (a) Mining claims held under licences, equal in area to 261.5426 full claims, of which 6 claims are situated on the farm Luipaardsvlei No. 8, and the balance on the farm Witpoortje No. 44, district of Krugersdorp, Witwatersrand gold fields. (b) 4 water-rights on the farm Witpoortje No. 44. The titles are in order. The balance sheet, which accompanies this report, reflects the company's position at the 31st December, 1918. The total expenditure during the year, after deduction of interest received, was £1,098 13s. 3d., of which £1,050 were for renewal of claim licences." The northern boundary is some 3,000 feet from the outcrop, and the reef at the northern boundary would be some 2,200 feet deep, assuming an average dip of about 35 deg. to 40 deg., the lower workings of the French Rand Company showing about 40 deg. It was intended to open up the property by means of two shafts, the eastern one of which was started, but work stopped in October, 1905, and work concentrated on No. 2 western shaft till all operations were suspended early in 1906. The stamping power contemplated was 150 stamps, but with, perhaps, 100 stamps only in the earlier stages. Five boreholes were put down years ago and the distances of the bores from where reef outcrops at north are as under:—Feet from outcrop: Bore 1, 3,650; bore 2, 3,190; bore 3, 2,800; bore 4, 3,710; bore 5, 5,120. It is important to note the significance that attaches to the fact that at the southern bore, No. 5, the reef was encountered about 800 feet nearer to the surface than was expected. It would look as if there had been a considerable flattening of the reef in this Western Rand property, or an upthrow similar in character to the upthrow in the Simmer East area, in the eastern portion of the Rand. It has to be borne in mind that the Tudor area is very near to the great dyke intrusion which cuts off the Central from the Western Rand strike of reef. The fact that the company has, however, eastward in its area encountered the reef in bore No. 5 and in bore No. 1 is important. The general features of what has been shown by the various bores are given in the following tabulated statement:—

BOREHOLE RESULTS AS TO DEPTH FROM SURFACE OF THE MAIN REEF (BOTHIA SERIES.)

- No. 1 (May, 1902).—2,251 feet; 60 inches reef matter; central portion, 6½ inches, assaying 7 dwts.
 No. 2.—Sunk to 3,214 feet and discontinued February, 1902; no positive results. Broken ground.
 No. 3 (July, 1902).—1,669 feet; 62 inches; section of 6 inches=9 dwts.
 No. 4 (September, 1902).—Two bodies of reef:—
 I., 2,087 feet; 65 inches, of which 8 inches=20½ dwts., 11 inches=15 dwts., 8 inches=1½ dwts., 8 inches=3½ dwts.
 II., 2,096 feet; 40 inches, of which 10 inches=16½ dwts., 6 inches=8 dwts.
 No. 5 (April, 1903).—Two bodies of reef:—
 I., At depth 2,350 feet, reef 28 inches=12.33 dwts., separated by sandstone from
 II., 20 inches=4.5 dwts. (25 inches core ground away).

The reef at No. 5 bore was struck about 800 feet above the anticipated depth of 3,100 feet to 3,200 feet. In Nos. 1, 4, and 5, about the Main Reef, a thin "leader" was intersected. At the end of 1904 No. 1 shaft was down to 158 feet depth, and No. II. shaft to 98 feet. At March 31, 1906, No. 1 shaft, expected to come on reef at about 2,100 feet, was down to 1,565 feet depth, and No. 2 shaft, expected to intersect reef at 1,800 feet, was down to about 150 feet when work was stopped. It is an important fact to be noted in connection with the Tudor that the reef series now being exploited on the old Teutonia section of the French Rand dips into the Tudor ground, and this fact must have an important influence on the outlook for the Tudor Company.

THE EAST CHAMP D'OR.

Of the East Champ d'Or Syndicate's 16 claims, 9 are located on the outcrop and 7 on the dip, and work is being prosecuted by means of two shafts and open cuttings along the outcrop which have been sunk down on reef. The section now being exploited by the East Champ d'Or Syndicate is not broken or faulted, although such a view appears to have been generally held in the past. By selective mining and the employment of a narrow stoping width a high grade of ore is being sent to the mill, which consists of 10 stamps each of 1,500 lbs. weight. Over a great deal of this property the bulk of the gold appears to be contained in the hanging wall section, and this concentration of value is being taken full advantage of by the management, the consequence being that a clean and high-grade tonnage of ore is being sent to the battery.

SANDS AND SLIMES.

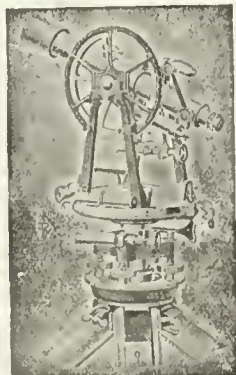
The gold is very fine and the greater portion is contained in the slimes, which have an average value of 9 dwts., the sands carrying about 3 dwts. Hitherto the syndicate has laboured under a disadvantage on account of the absence of a cyanide plant, but sands and slimes tanks with filter press, etc., are now under construction, and next month the syndicate will be crushing about 1,600 tons and will be dealing with the valuable sands and slimes products. Even without cyanidation the syndicate has to date crushed approximately 6,000 tons of ore for a return of about £6,000 over the plates alone, and as the property is being worked on sound economical lines and working expenses are understood to be no more than 12s. 6d. per ton, it can be readily understood that the concern is already a profitable one, whilst returns will be very greatly increased by the treatment of the current and accumulated sands and slimes.

THE HUMPHREYS CLAIMS.

Immediately to the east of the East Champ d'Or ground are the workings of Mr. Humphreys. Mr. Humphreys has pegged 62 claims and has done a considerable amount of development work on the surface section, where reef of satisfactory value has been opened up and is now being crushed by a 10-stamp battery. Immediately to the south of Humphreys' mill is a shaft, now full of water, which is 800 feet deep. This shaft is understood to have been opened upon seven levels and to have developed about 70,000 tons of ore, and when dewatered it should prove a most valuable asset. It is worthy of note as evidencing the interest being exhibited in this portion of the Witwatersrand that a small syndicate is now engaged in doing some preliminary investigation work on the old Grey's Mynpacht Mine, whilst still further east alluvial gold is being recovered in a creek between Roodepoort and Witpoortje.

AN AREA OF POSSIBILITIES.

It would appear from an examination of this area and a study of the assay plans that the Teutonia claims constitute one of the best sections of the West Rand, but that for some reasons which are not altogether clear the French Rand Company never gave this area the attention it merited. It may yet be another case of the stone which the builders rejected becoming the head of the corner in so far as the Luipaardsvlei section is concerned, and one can rest assured that further developments in this area will be watched with very keen interest.



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THE JUNE OUTPUT IN DETAIL.

Decrease of £96,068—Outside Districts Better—Crown Mines and E.R.P.M.—Larger Returns.

Total output	702,379 ozs.
Value	£2,983,515
Decrease	22,616 ozs.
Value	£96,068
Witwatersrand	682,603 ozs.
Value	£2,899,514
Decrease	23,555 ozs.
Value	£100,052
Outside districts	19,776 ozs.
Value	£84,001
Increase	939 ozs.
Value	£3,984
Stamps	8,239
Decrease	45

INDIVIDUAL RETURNS.
WITWATERSRAND.

	Value. £	Increase. £	Decrease. £
Aurora West	13,159	—	3,573
Brakpan	92,142	—	28,145
City and Suburban	27,950	—	4,460
City Deep	94,453	—	4,443
Con. Langlaagte	54,282	—	2,323
Con. Main Reef	72,985	—	2,748
Crown Mines	234,593	7,132	—
Durban Roodepoort Deep.	29,020	—	6,470
E.R.P.M.	147,018	5,705	—
Ferreira Deep	50,994	—	1,461
Geduld Prop.	65,640	—	349
Geldenhuis Deep	57,905	—	463
Ginsberg	9,264	—	1,321
Government Areas	204,596	—	14,192
Jupiter	24,190	—	158
Knight Central	26,705	140	—
Knights Deep	77,496	3,097	—
Langlaagte Estate	19,295	—	4,112
Luipaardsvlei	22,177	—	404
Meyer and Charlton	40,803	229	—
Modder B.	121,239	752	—
Modder Deep	93,807	637	—
New Goch	14,837	1,206	—
New Heriot	16,035	—	255
New Kleinfontein	67,288	—	4,269
New Modder	173,923	—	5,786
New Primrose	18,066	—	586
New Unified	11,618	—	407
Nourse Mines	53,734	—	2,476
Princess	25,779	—	1,967
Randfontein Central	171,120	4,957	—
Robinson Deep	67,679	—	5,641
Roodepoort United	22,267	336	—
Rose Deep	60,084	—	4,312
Simmer and Jack	61,091	1,232	—
Simmer Deep	45,820	3,289	—
Springs Mines	63,559	—	4,702
Van Ryn Estate	34,933	106	—
Van Ryn Deep	99,966	—	3,526
Village Deep	61,949	—	6,456
Village Main	22,330	—	3,505
West Rand Consolidated	37,588	—	1,465
Witwatersrand	40,482	—	1,941
Wit. Deep	36,339	59	—
Wolhuter	39,381	1,504	—
Robinson	35,791	—	6,244
Bantjes	1,177	179	—
Miscellaneous	6,205	—	2,450

OUTSIDE DISTRICTS.

	Value. £	Increase. £	Decrease. £
Sub Nigel	27,920	2,561	—
Barrett	741	81	—
Glynn's Lydenburg	6,486	—	641
T.G.M. Estates	26,221	1,411	—
Miscellaneous	22,630	539	—

LABOUR FIGURES.

The number of natives employed on the last day of June by the W.N.L.A. and contractors was as follow:—On gold mines, 172,505; on coal mines, 12,544; on diamond mines, 5,831; total, 190,880.

At the meeting of the Senate of the University of South Africa, held at Grahamstown last week, the following were elected Deans of their respective Faculties for the ensuing year: Arts, Professor J. H. Hofmeyr (Johannesburg); engineering, Professor J. Orr (Johannesburg); science, Dr. P. G. Gundry (Pretoria); agriculture, Professor Hector (Pretoria); commerce, Professor J. Findlay (Johannesburg); law, Advocate W. Pittman (Pretoria), and Professor A. C. Paterson (Pretoria) chairman of Senate.

Rhodesia and the Union.

In a letter to the Rhodesian papers advocating the fusion of Rhodesia with the Union, Mr. J. G. McDonald says: It must be apparent to everyone who visits any part of the Union that there are evidences of a great industrial expansion within the past few years and there are strong indications of a continuance of this satisfactory state of affairs. The following figures give some indication of what is going on: There are over 5,000 factories in the Union carrying a capital of some 51 millions sterling, and these deal annually with raw materials worth over 14 millions sterling. The value of manufactured output for the year 1917 was over 49½ millions sterling. Employment is given by the factories to some 114,000 people, of whom 46,000 are whites. Salaries and wages earned amount to about £11,000,000 sterling. Agricultural production for the year 1918 was over 70 millions sterling. Exports from the Union for 1919 excluding gold amounted to 33 millions sterling. Mining production for the year 1918 was fully 52½ millions sterling. Commenting on this subject the Trades Commissioner for the Union in London said: "It is divulging no secret to say that the eyes of very big manufacturing interests are at the moment turned towards the sub-continent, and whether or not our people are prepared to pioneer the industrial possibilities of the country there is more than a vague likelihood of important enterprises being established by others who recognise in the favourable position the Union occupies in the Southern Hemisphere as well as in the possession of most vital raw materials, advantages for manufacture of the highest order. . . . The recent statistics of manufactures tend to confirm the fact that the Union has entered upon a definite era of manufacturing activity."

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THE JUNE GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of June:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
City Deep ...	154	10	48,000	22,236	£26,405	28/3
Cons. Main Reef	220	6	47,000	17,182	8,050	27/2
Crown Mines ...	660	26	168,000	55,250	44,538	22/3
Durban Deep ...	100	3	18,400	6,832	*5,305	36/11
East Rand Prop.	440	19	111,000	34,611	8,535	24/7
Ferreira Deep ...	130	7	33,000	12,005	11,084	23/11
Geldenhuis Deep	300	7	47,200	13,632	1,217	23/8
Knight Central ...	120	3	21,700	6,287	*6,555	30/4
Modder B. ...	104	8	54,500	28,542	63,160	20/10
New Modder ...	236	15	79,000	40,945	91,412	20/6
Nourse Mines ...	180	5	40,600	12,650	2,105	25/1
Robinson ...	180	6	35,400	8,426	*5,747	23/4
Rose Deep ...	300	7	50,600	14,145	11,740	18/9
Village Main Rf.	130	4	17,400	5,257	1,079	24/2
Wolhuter ...	120	1	30,700	9,271	5,570	21/8
Village Deep ...	180	7	38,900	14,584	2,501	30/2

Tls. & averages 3,584 137 841,400 301,855 £259,789 23/11

a Includes 4 Nissen stamps. b Includes 24 Nissen stamps.

c Includes 56 Nissen stamps.

* Loss.

Durban Roodepoort Deep, Ltd.—Loss due to falls of ground No. 1 shaft, already reported.

Robinson Gold Mining Co., Ltd.—Skip derailments seriously affected tonnage milled and entailed abnormal expenditure on shaft repairs.

Village Deep, Ltd.—Reduced tonnage mainly due to weight in stopes which necessitated extra timbering and entailed stoppages.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of June of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs.	Total Profit
Simmer and Jack ...	320	7	57,100	14,107	£7,629
Robinson Deep ...	140	10	50,000	15,933	5,749
Knights Deep ...	400	11	95,000	17,766	2,018
Simmer Deep ...	220	10	43,600	10,787	*2,807
Jupiter ...	80	5	22,300	5,695	*1,961
Sub Nigel ...	30	2	10,400	6,393	7,316

Totals ... 1,190 45 278,700 70,681 £17,944

* Loss.

Gold Reserve.—Simmer and Jack, 575 ozs.; Knights Deep, 478 ozs.; Sub Nigel, 3,090 ozs.; total, 4,143 ozs.

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of June: Tons crushed, 3,830, yielding 1,526 fine ozs.; estimated value of month's output, £6,318; estimated loss for the month, £185. Loss due to extraordinary expenditure and lower grade.

Witwatersrand Deep.

The following are the results of the development during the month of June:—Total feet, 259; footage sampled, 235; reef width, 28'3 inches; reef value, 18'2 dwts.; inch dwts., 515.

Union Corporation.

Results of operations on the producing mines of this group for the month of June:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton
Geduld Proprietary ...	100	43,800	£65,886	30/1
Modder Deep Levels ...	70	41,500	93,475	45/1
Princess Estate ...	60	19,600	26,296	26/10

Totals ... 230 104,900 £185,657 —

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton
Geduld Proprietary ...	£44,257	20/3	£21,629	9/10
Modder Deep Levels ...	37,704	18/2	55,771	26/11
Princess Estate ...	27,147	27/8	851	0/10

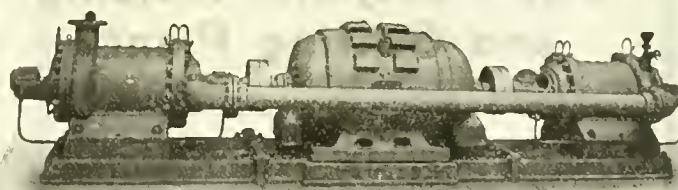
Totals ... £109,108 — £76,549 —

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of June, 1919:—Central Mines: Tons crushed, 12,500, yielding 4,550 fine ozs. Elandsdrift Mine: Tons crushed, 1,210, yielding 830 fine ozs. Vaalhoek Mine: Tons crushed, 1,880, yielding 791 fine ozs. Estimated value of month's output, £25,800; estimated profit for the month, £4,159.

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Albu Group.

The June operations of the producing mines of this group were as follows:—

Company	Tons Crushed.	Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	12,500	£16,403	26·24	£13,080	*£3,323
Meyer & Charl.	14,030	16,665	23·76	40,170	23,505
New Goeh ...	14,740	13,665	18·54	14,187	522
Roodepoort Un.	23,100	23,955	20·74	22,412	*1,543
Van Ryn Est...	35,250	29,179	16·56	36,166	6,987
West Rand Cn.	31,620	35,733	22·60	37,270	1,537
	131,240	£135,600	20·66	£163,285	£27,685

* Loss.

Aurora West.—The breakdown of the mill engine on 20th June accounts for the small tonnage and high costs. Repairs will not be completed before the middle of July, so that results for the current month also will be adversely affected.

Van Ryn Estate.—The profit includes £1,534 from farm revenue for the financial year.

Consolidated Mines Selection Group.

The following are the results of operations for the month of June:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines ...	110	45,500	25/ 6·490
Springs Mines ...	80	33,500	25/ 5·257
Totals and averages ...	190	79,000	25/ 5·967
	Value of Gold declared.	Yield per Ton.	Working Profit. Profit per Ton.
Brakpan Mines ...	£88,210	38/ 9·286	£30,105 13/ 2·796
Springs Mines ...	62,812	37/ 5·997	20,308 12/ 0·740
Totals & averages	£151,022	38/ 2·801	£50,308 12/ 8·834

Brakpan Mines.—Added to gold reserve, 666 fine ozs.; total reserve at date, 7,309 fine ozs.

Barnato Group.

The results of operations of the Barnato group for June are as follows:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	43,200	£54,282
Ginsberg ...	70	7,900	9,267
Government Areas ...	200	118,500	204,595
Langlaagte Estate ...	200	40,900	49,296
New Primrose ...	115	19,500	18,066
New Unified ...	60	11,600	11,618
Randfontein Central ...	600	150,000	171,119
Van Ryn Deep ...	90	46,700	99,968
Witwatersrand ...	215	33,900	40,841

Totals and averages ... 1650 472,200 £659,052

May totals ... 1,640 485,000 £682,497

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit includ- ing Sundry Revenue.
Consolidated Langlaagte ..	£42,502	19·677	£12,015
Ginsberg ...	8,878	22·476	475
Government Areas ...	117,132	19·769	88,010
Langlaagte Estate ...	41,216	20·155	8,244
New Primrose ...	15,635	16·036	2,513
New Unified ...	9,820	16·930	1,835
Randfontein Central ...	159,325	21·243	12,567
Van Ryn Deep ...	47,944	20·533	52,980
Witwatersrand ...	36,321	21·428	6,028

Totals and averages ... £478,775 20·278 £184,687

May totals ... £496,438 20·472 £190,416

Monthly Gross Profit, 1919.—January, £162,943; February, £154,054; March, £179,310; April, £180,785; May, £190,416; June, £184,687.

Ginsberg.—Mining operations ceased during month. Increased grade due to partial final clean up.

INVESTORS' DIARY.

FORTHCOMING COMPANY MEETINGS.

July 17.—Modder Deep Levels, Ltd., Extraordinary General Meeting Consolidated Building, 11.30.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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THE S.A. MINING AND ENGINEERING JOURNAL ENQUIRY PAGE.

Informative Service for Shareholders Free to Readers of this Journal.

In response to requests from numerous readers of this journal resident in various parts of Africa, and also Overseas, it has been decided to extend and amplify the enquiry columns of this journal in regard to the affairs of companies and syndicates in which readers may be interested or propose to become interested.

In connection with this information service, which is offered free to all readers, the following regulations must be distinctly understood and observed:—

1. *The South African Mining and Engineering Journal*, whilst undertaking to obtain the latest and most accurate information available in regard to assets, liabilities, operations, finance, Directorate, offices and prospects, etc., disclaims any responsibility for pecuniary loss in speculation or investments resulting from such information.
2. We cannot undertake to advise clients to buy or sell or hold, or to give "Sharemarket tips." We supply the most reliable and up-to-date information available and readers must form their own judgment therefrom.
3. Under no circumstances can letters be replied to direct. Communications can only be answered in this column.
4. Enquirers may use a pen name or give their real names, as they wish, but the correct name and full address of the enquirer must accompany each communication, not necessarily for publication, but as a guarantee of good faith.
5. In future we shall publish the name of the company or syndicate about which enquiries are made.
6. All enquiries should be addressed to the Editor, *The South African Mining and Engineering Journal*, Box 963, Johannesburg, and marked "Enquiry" in the top left-hand corner of the envelope.

The following communications are answered in this issue:—

H. LINDLEY (West Rand) writes: "Kindly inform me whether the Tudor G.M. Co. possess their original property adjoining the old Tentonia. Has the Company any cash in hand and what house controls the Company?"

The Tudor Gold Mining Company, Ltd., has a registered capital of £400,000 in £1 shares of which 340,000 shares are issued and 60,000 are held in reserve. The company is controlled by the Union Corporation. The company holds 261.5 full claims and 4 water rights on the dip of the old French Rand Mine. Yes, a considerable portion of the ground lies immediately south of the old Tentonia section and the company's titles are in order. The last balance sheet issued (as at December 31st, 1918) showed that the company had cash and other liquid assets amounting to £8,652 3s. 3d. and liabilities of £50 19s. 1d. The company's funds earned £343 12s. 6d. last year in interest and claim licences have been renewed.

G. H. CLARKE (Maritzburg) writes: "Can you inform me whether the Ryan Nigel G.M. Co. shares have been effected by the general improvement in the Heidelberg District? Who are the Directors and what cash assets does the company possess; state also land holding (if any). Would you advise me to buy in order to level up my holdings against cash to be paid out in case of liquidation?"

The Ryan Nigel Gold Mining and Estate Company has a capital of £115,000 in £1 shares all issued and fully paid. The last annual meeting of the company was held in Johannesburg on September 18, 1918, and the report and balance sheet for the year ended June 30, 1918, gave, *inter alia*, the following information:—Directors: Mr. B. T. Bourke (Chairman), alternate Mr. R. J. Bourke; Mr. Raymond des Clayes, alternate Mr. J. H. Keegan; Mr. B. Koenigsbert, alternate Mr. P. C. Haviland; Mr. C. H. Dawes, alternate Mr. Evelyn W. Smith. At June 30, 1918, liabilities were £67 1s. 6d. and the balance

sheet disclosed the following assets:—By property, £86,475 7s. 2d., being portion of Farm Noycedale No. 71, District Heidelberg, in extent 298 morgen 474 square rods, and 207 Claims thereon; Farm Tweefontein No. 268, District Pretoria, in extent 4,734 morgen 175 square rods; Farm Witfontein No. 350, District Pretoria, in extent 4,204 morgen 455 square rods; certain western portion of Farm Klipsijfering No. 353, District Pretoria, in extent 1,782 morgen 192 square rods; certain portion "C" of Farm Toitskraal No. 421, District Pretoria, in extent 817 morgen 360 square rods; Investments, £175; Buildings, balance at 30th June, 1917, £250 7s. 2d., less 10 per cent. depreciation, £25 0s. 8d.—£225 6s. 6d.; machinery and plant, balance at 30th June, 1917, £209 9s. 7d., less 10 per cent. depreciation, £20 18s. 11d.—£188 10s. 8d.; mine furniture, £10; sundry debtors, £528 19s. 8d.; stores, Tweefontein, £15 5s. 6d.; cash, National Bank of S.A., Ltd. (Natal Bank Branch), fixed deposit, £22,500, at Bankers on current account, £382 9s. 2d.—£22,882 9s. 2d.; profit and loss, balance as at 30th June, 1917, £5,106 17s. 6d., less profit for year ended 30th June, 1918, £540 14s. 8d.—£4,566 2s. 10d.; total, £115,067 1s. 6d. Mr. B. T. Bourke, who presided at the meeting, stated:—You will note that during the year we purchased the farms "Witfontein" and portions of the farms "Klipsijfering" and "Toitskraal," adjoining your farm "Tweefontein," and now hold in one block, nearly 12,000 morgen. Dr. Wagner, who has reported on this block, states it is in the middle of a highly mineralised district, and he recommends prospecting for base metals and coal. His report lies on the table for your inspection. We have arranged for preliminary prospecting, and hope this will soon justify operations on a larger scale. No developments of any importance as far as we know have taken place in the neighbourhood of our property adjoining the Nigel. At date we have £23,000 on fixed deposit and a credit on ordinary account. During the year the company received the following moneys: Interest, £1,006 7s. 4d.; revenue, being owner's share of licences, £450 4s. 7d.; rents, £259 8s.; dividends received, £52 10s.; credit balance, £4,566 2s. 10d. We do not advise you either to buy, sell or hold (see conditions under which this letter is answered). If the company went into liquidation there should be ability to pay out at least 7s. per share, apart from mineral prospects. The cash assets alone represent 4s. per share.

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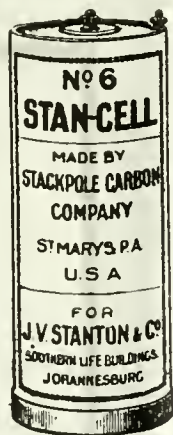
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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

West Rand Geology.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—“ To know the truth is a great thing for thyself; to tell the truth to others is a great thing for the world! ” This has been my motto for the last thirty-three years whilst I have been studying the geology and stratigraphy of this country, and I strongly object to northern hemisphere geologists coming here and giving rash opinions on our three five-mile-thick auriferous ages without having first studied them in the order in which Nature laid them down, viz., first, the Lydenburg age, on the top of the schistose, which latter all the world has; then the Witwatersrand age; and last, but not least, the Black Reef age, which has made the Far East Rand, and will be the making of the Far West Rand, if the public only knew. Dr. Hatch was the first offender (by calling Van Ryn series Main Reef series), then came Dr. Molengraf placing the Black Reef in the Lydenburg age, and the late Dr. Carrick turning Black Reef series into Main Reef, and so on many others of the orthodox school. It is all very well to be posted in the thousands of feet of the fossiliferous strata of Europe, its igneous and basic rocks, etc., but here they have to deal with something quite new, which books cannot tell them of, only “ Nature's book,” which has to be studied leaf by leaf on foot, not by motor car or cart, thereby skipping the most important pages. I can honestly say that for the love of the thing, having been nobody's hairpin, I have footed every yard of each age, and it gets on my nerves when, as in your last issue, I see again Dr. Hatch's fine points republished to try and prove the late Dr. Carrick's contention that the Randfontein series is Main Reef series, and that the boreholes on the Western Rand Estates cut the latter, and not Black Reef series as the dolomites indicate apart from all else. Far be it from me to detract one iota from the value of the Western Rand Estates property, and the inestimable good its opening up will do to the Rand; rather would I say that in so vast an area I know for a fact that they have our Witwatersrand age, and the auriferous portion of the Black Reef age as well, overlying the former. In many places on that property the Black Reef dolomites are denuded, and the auriferous reefs of the series exposed, hence there is room for many mines devoid of water troubles, and their exploitation will lead the way to many more miles of outcrop mines later on—a thing this country wants to see again, for reasons better not expressed.—Yours, etc.,

SCOTT ALEXANDER,

“ Rand Stratigraphist.”

Johannesburg,
July 9th, 1919.

Oil in South Africa.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I have read with great interest your article, appearing in your issue of June 14, 1919, on the Petroleum Industry in South Africa. In the *Volkstem* of the 12th April last I wrote an article on the same subject, wherein I brought forward arguments in favour of the occurrence of oil in some districts of the Eastern Transvaal and criticised certain fallacious theories and misconceptions about the formation and occurrence of oil and oil shales and the interdependence of the one on the other. According to these theories there cannot be payable oil in South Africa, whereas no less an authority than Dr. Molengraf, as long ago as 1898, in one of his reports to the then Government, stated it as his opinion that petroleum in payable quantities may one day be discovered in the districts of Ermelo and Wakkerstroom. Now, it is exactly in these districts that I

am able to inform you that within the last six or eight months very interesting discoveries of surface liquid petroleum have been made, more especially on a farm about twelve miles south-west of the town of Ermelo, which justify the belief that this article will be found in payable quantities at no great depth. Anyone can realise of what incalculable advantage the production of its own petroleum would be to South Africa. It would revolutionise agriculture and mean the salvation of agriculturists. Consider only what the introduction and use of cheap motor ploughs would mean to the farmer, the use of which is at present precluded by the prohibitive price of petrol. Furthermore, we are at the commencement of a new era of aerial navigation and aerial traffic of inconceivable magnitude, which will demand the consumption of enormous quantities of petrol. These and innumerable other industries and usages only slightly indicate the unprecedented use of and demand for petroleum in the immediate future. It is a well-known fact that the known sources of supply of petroleum in the world are being rapidly depleted. At the present rate of consumption the U.S.A., the greatest producers till now, will be exhausted in about twenty years. Therefore it is not to be wondered at that every country in the world is making great efforts to locate oil within its own territories, and certainly it behoves the people and our Government not to lag behind in a matter of such world-wide importance. For one thing, it would solve our labour problems and economic difficulties for an indefinite period. Suffice it to say that the establishment of a thriving petroleum industry would brighten the present gloomy outlook and enable us to view without uneasiness of mind the closing down of low-grade gold mines and the working out of others. And therefore it is a very reasonable suggestion that our Government should, without any further delay, encourage prospecting and boring for oil by not only granting a substantial bonus to the first discoverer of payable oil, but by supporting the boring operations pecuniary on, say, the £ for £ system. This, in my opinion, would encourage quite a number of syndicates and companies to within a short period commence boring operations to no small extent, and I may state here that, although I am not an expert on oil, after careful investigations in the aforesaid districts and after comparing very carefully the different indications there with those in other countries where oil has been discovered, I have come to the conclusion, no matter what some geologists and experts may say, payable oil beds in those districts will yet be discovered and that at some places at no great depth. Thanking you in anticipation for the publishing of the above in your valuable columns,—Yours, etc.,

P. E. MARE.

228 Proes Street, Pretoria,
8th July, 1919.

The Kalahari Scheme.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I have read the pamphlets on the Kalahari scheme with the greatest interest; it certainly is a scheme that will have to be put into execution if we wish to prevent the parts referred to and surrounding country from drying up altogether. We ourselves had long ago thought out a scheme to irrigate the Kalahari. Our idea has, or rather had, been to run canals into the Kalahari from the Okavango district near Lake Ngami, now of course dry, and so by artificial means to irrigate the whole of the Kalahari, in which case thousands of cattle could be raised and reared there and the ground itself, being very fertile, all the cereals necessary for our local population could be raised there and the surplus could be exported. Last year I personally suggested to the chief Mathibi, the chief of the Batawana tribe,

that I would at my own expense find two white men and that he should find a couple of hundred of his Makoba subjects and the necessary canoes for the purpose of opening up the closed channels of the Okavango River, which used to flow into the Lake Ngami, and closing those which had been diverted into other directions. He was most enthusiastic about the whole scheme, but unfortunately, like the Spaniard, it was "to-morrow." I notice in Professor Schwarz's pamphlet, there is no mention of the Okwa River,* which was formerly a constantly running river, but which is now silted up with sand and is dry. At Carolina Hof, 25 km. from the Protectorate border, the water now runs underground in some places at a depth of 5 to 6 feet. I have also noticed at about 100 miles down the river, where our Ghanis road through the Kalahari intersects this river, proofs of this underground flow. It is supposed that Andersson travelled down this river, which at some parts formed itself into great vleys and that Andersson came to what is generally spoken of as Andersson's mythical vley. This Okwa River runs to Loklakane, thence to Selokolele near Kanye, thence to the Molopo River. I may mention that the Otjimbindwe River also runs into the Okwa River; this was also in years gone by a running river. Again we have on the southern side of the Okwa River the Takashowe, in days gone by a running river, flowing into the Okwa about 30 miles above the confluence of the Otjimbindwe (a Damara word meaning blood); then again, there is the Takashane, or little Takashowe. In any of these river beds fresh water could be found at various depths. Should Professor Schwarz's scheme be carried out, we would do away with all our swamps in the vicinity of the Lake Ngami, and having single large rivers, we would be able to exterminate the mosquito through the aid of petroleum, etc., and make such places health resorts; malaria would be a thing of the past. I may mention that the whole of the Ngamiland district is one of the most fertile that I have ever seen: coffee, sugar, rice, tea, etc., would grow and thrive most luxuriantly; cotton also grows wild on the other side of the

Okavango River. I am resident in those parts and take a deep interest in any proposed scheme that might, and would as a matter of course, benefit our country, and *ipso facto* benefit the adjoining territories. I am sure we should be very thankful for any encouragement to such a scheme as Professor Schwarz's; he certainly is moving in the right direction.—Yours, etc.,

M. KAYS.

Ghanis, via Palapye Road,
British Bechuanaland Protectorate.

* The lower part of this is called the Letyaho, which is shown in the map published in the *Mining Journal* for 26th April, 1919.

The Price of Gold.

In the House of Commons in mail week Mr. Macquisten asked the Chancellor of the Exchequer whether the costs of all gold mining companies had greatly increased, and the intrinsic value of gold also greatly increased, while the standard mint price was arbitrarily fixed at an artificially low price, viz., £3 17s. 6d., being at least £1 below its selling price to industries, and that as a result of this low price production was greatly diminished and many mines were closing down; and whether he would approach the Allied nations to base a price fixed among them for gold more nearly approximating to its real value and the costs of production, and therefore stimulate production and reduce the world shortage of gold and increase the gold reserve which is vital to our foreign trade. Mr. Chamberlain replied: The mint price of gold is £3 17s. 10½d. per ounce standard. The prices now being paid for the very limited supplies of gold at the moment available in London for the arts are not, I think, any indication of what would be the price in a free market. In any case, I can imagine nothing more mischievous to our foreign trade than tampering with the standard of value.

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THE WEEK IN THE SHAREMARKET.

Dull—Featureless—Activity in Diamond Stocks..

Nothing but quotations was to be found on Friday's early list. The call was a dull record. All the Modderfontein stocks, except Modder East and the four-year options, were passed without actual business. Western Rand Estates, which had receded overnight to 6s. from their advance to 7s. 6d., were sold at 5s. 9d. and finished at 5s. Middelville dropped in sympathy from 2s. 6d. to 1s. 9d. The reason given for the setback was that the statement regarding the American syndicate is incorrect. Time, however, will show who is right. The only active stock on the list happens to be Rooibergs, which went from 4s. 9d. sellers to 5s. 9d. buyers, after sales at 5s. 7d. At the opening on Saturday Compound Diamonds, for which 11s. was the best bid at the previous day's close, recovered to 15s. sales and buyers. Rather more business was put through at the call, all the Modder stocks recording sales. Prices in Van Ryn Deeps, Springs, Geduld Props and Sub Nigels were slightly on the decline. The call was dull on Monday, with a lower tendency in Government Areas, Springs, Rand Selections and Van Ryn Deeps. The market continued dull during the day with a further fall in Government Areas. On Tuesday Government Areas recovered to a small degree. A forced sale, to arrive, of Rand Selections brought the price down to 70s. The whole market was inactive, but a believer in the future of Crown Diamonds paid 2s. 3d. for a thirty-day call on 24s. 6d. At Wednesday's opening Crown Diamonds were in demand and made 24s. 9d., remaining sellers at the price. Compound Diamonds were done at 15s. 6d. and Roberts Victors at 14s. Very little change was noted at the call. Springs were better and Modder Bs. the turn harder. On Thursday the alterations in prices were hardly noticeable. Alkalis made 20s., which is 4s. above their last selling price. The demand for better class stocks is limited, and with the eclipse of Western Rand Estates there is nothing cheap and easy by which the jobber can make some money and the outside man gain experience. In the outside stocks Compound Diamonds have gone through considerable fluctuations. When last reported they stood at 15s. 9d., from which they rose to 18s., fell back to 11s., and at the time of writing have been sold at 15s. Koodoos have been dealt in at 20s. and 20s. 3d., and the vendors at from 14s. to 18s. Other sales were: Sakalavas, 7s. 6d.; Phoenix, quoted at 1s. 10d.—2s.; Theron Diamonds at 15s.—17s. 6d.; and Makganyenes at 35s.—37s. 6d.

	Fri., 4th.	Sat., 5th.	Mon., 7th.	Tues., 8th.	Wed., 9th.	Thurs., 10th.
African Farms . . .	13 9*	14 0	13 6*	13 6*	13 6*	13 6*
Anglo-Amer. Corp. .	—	26 0†	—	23 0*	—	—
Apex Mines	6 9*	6 9*	—	6 9*	6 9*	7 0*
Bantjes Cons . . .	2 3*	2 3*	2 4*	2 4*	2 4*	2 4*
Brakpan Mines . .	59 0*	57 6*	57 6*	57 6*	59 3†	59 0†
Brick and Potter. .	—	4 0*	4 0*	4 0*	—	—
British South Africa	21 0*	21 0*	21 0*	21 0*	21 0*	21 0*
Bushveld Tins . . .	—	1 6*	1 6*	1 6*	1 7*	1 6*
Cinderella Cons. . .	4 9*	4 9*	—	4 9	1 9*	1 0*
City and Subs. . . .	6 6*	6 6*	6 6*	7 0†	6 3A	6 3†
City Deeps	51 6†	53 0†	53 0†	53 0†	50 0*	52 0†
Clydesdale Colls. .	—	24 6*	—	—	21 6*	—
Con. Langlaagtes . .	18 0*	19 0†	18 0*	18 0†	17 0*	17 0*
Con. Main Reefs . .	9 0†	8 11*	9 0	8 9*	8 9*	8 3*
Con. Mines Sel. . .	—	—	—	21 9†	—	20 0*
Coronation Colls. .	—	—	—	57 6*	57 6*	57 6*
Coronation Frees. .	1 10	1 10*	1 10*	2 0*	2 0*	1 10*
Coronation Synd. .	—	—	—	—	—	2 6*
Crown Dias. . . .	24 3*	24 6*	24 0*	24 3*	24 6*	25 0*
Daggafontein Mines	21 6*	21 6*	21 0*	21 0*	21 0*	21 3*
East Rand Coals . .	2 7†	2 6*	2 6*	2 6*	2 6	2 5*
East Rand Deeps . .	0 10*	1 0†	0 10*	1 0†	0 10*	0 10*
E.R. Minings	—	17 3*	—	—	17 3	17 0*
East Rand Props. . .	5 9*	5 6*	5 3*	5 6*	5 6*	5 6
Eastern Golds . . .	1 0*	1 0*	1 0*	1 3*	1 2*	1 1*
Frank Smith Dias. .	4 8	4 6*	4 6*	4 8	4 7*	1 7*
Geduld Props. . . .	15 6	15 0*	15 6*	15 9*	15 6*	15 6*
Ginsbergs	1 7*	—	—	1 6*	1 7*	1 7*
Glencairns	1 0*	1 0*	1 0*	1 0*	1 0*	—

*Buyers. †Sellers. AEx London. BOdd lots

	Fri., 4th.	Sat., 5th.	Mon., 7th.	Tues., 8th.	Wed., 9th.	Thurs., 10th.
Glencoe Colls. . . .	6 6†	—	6 0	—	5 0*	—
Glynn's Lyden. . . .	17 0*	—	—	—	16 9*	—
Govt. Areas	90 3*	89 6*	89 0*	89 6	88 9*	88 9*
Hume Pipes	27 0	26 0*	—	—	—	26 0*
Jhb. Bd. of Exec. . .	30 0*	—	—	30 0*	30 0*	30 0*
Jupiters	—	2 6*	2 8*	—	2 6*	2 6*
Klerksdorp Props. .	1 2*	1 2*	1 2*	1 2*	1 2*	1 2*
Knight Centrals . .	6 0*	6 1*	6 1*	6 2*	6 2*	6 2*
Knights Deeps . . .	—	5 0*	—	—	—	—
Lace Props.	16 0*	16 3*	16 3*	16 9*	—	16 3*
Leeuwpoot Tins . . .	23 9*	23 9*	23 9*	23 9*	23 3*	23 0*
Luipaardsvlei Est. .	2 3*	2 3*	2 6*	1 6A	2 6*	—
Lydenburg Farms . .	8 6*	8 4*	8 3*	8 3*	8 3*	8 3*
Middelville Est. . .	1 9	1 6	1 8*	1 7*	1 9*	1 9*
Modder B's	—	154 0	153 9*	154 0*	155 3*	156 0*
Modder Deeps	153 0*	154 6	153 0*	156 0	153 0*	156 0
Modder Easts	20 3	20 4†	20 4†	20 4†	20 3	20 1†
Do. Options (3yrs.) .	3 0*	3 1*	3 1*	3 2*	3 3*	3 1*
Do. Options (4yrs.) .	5 1	5 1*	5 1	5 0*	5 0*	4 9*
New State Areas . .	25 6*	25 6*	25 9	25 9	25 6	25 0*
Natal Navig. Colls. .	23 0*	—	23 6*	25 0*	25 0*	—
National Banks . . .	£15*	£15†	£15†	£15†	£15†	£15†
New Boksburgs . . .	1 0*	—	1 3*	—	—	—
New Eland Dias. . .	25 0*	25 0*	25 0*	25 0*	—	25 0*
New Era Cons. . . .	10 0*	10 0*	10 3	10 3*	10 3*	10 3*
New Geduld Deeps . .	1 6*	4 8†	4 8†	—	—	4 5*
New Heriots	—	—	—	—	11 0†	10 0†
New Kleinfonteins .	9 0*	9 6	9 1*	9 0	9 0†	8 6*
New Modders	—	£26½	£26A	—	—	£25½*
New Unifeds	—	3 0*	3 0*	3 0*	3 0*	3 0*
Nigels	—	5 3*	5 3*	5 0*	5 3*	5 3*
Nourse Mines	10 0†	8 6*	—	—	8 3*	—
Premier Def.	155 0*	155 0*	—	150 0*	—	—
Premier Pref.	140 0*	150 0†	150 0†	150 0†	150 0†	150 0†
Premier Cements . .	67 6*	68 0*	69 0	69 0*	69 6	70 0
Princess Estates . .	—	—	2 3	2 0	2 1	2 0
Pretoria Cements . .	67 6*	68 0*	69 0	69 0*	69 6	70 0
Rand Colls.	—	—	—	—	3 3*	—
Rand Nucleus	1 5*	1 5*	1 5*	1 5*	1 5*	1 6*
Rand Select Corp. . .	76 3	76 0	72 0*	70 0*	70 0*	70 0*
Randfontein Deeps . .	—	4 3*	4 9†	4 1*	4 3	4 2*
Randfontein Est. . .	11 6*	14 6*	—	15 0	11 9	14 6*
Roberts Victors . . .	14 0	13 9*	14 0	11 0	11 0	11 0
Rooibergs	5 7	5 6*	6 0	5 6*	6 0†	5 0*
Roodpoort Uniteds . .	—	—	—	1 9*	1 9*	—
Rose Deeps	—	—	—	—	16 0†	—
Ryan Nigels	3 0*	3 6*	3 6*	3 7*	3 9	3 9*
Shebas	2 0†	1 6*	1 0*	1 0*	1 3*	1 3*
Simmer Deeps	—	1 3†	—	1 3†	1 3†	1 3†
S.A. Breweries	28 3*	28 3*	28 3*	—	28 3*	28 3*
S.A. Lands	5 9*	—	—	—	5 8	5 7*
Springs Mines	47 0*	46 6*	46 3	46 0*	47 3	46 6*
Sub Nigels	21 6*	21 6*	21 3*	21 6*	21 9	21 3*
Swaziland Tins	—	—	12 0*	11 0*	11 0*	12 0*
S. Van Ryns	8 7*	8 6*	8 6*	—	8 6*	8 3*
S.A. Alkali	12 6*	12 6*	13 0*	16 6*	14 0*	20 0
Trans. G.M. Est. . . .	—	14 6†	—	—	—	—
Tudor	1 2	1 2	1 3	1 4	1 4	1 5
Tweefontein Colls. . .	22 6*	—	—	—	22 6*	23 6*
Do. Pref.	22 6*	—	—	—	—	—
Van Ryn Deeps	67 6*	67 6	67 0*	67 0*	66 6*	66 9*
Van Dyks	2 3*	—	—	2 3*	—	—
Village Deeps	12 0†	10 6*	12 0†	—	—	—
West Rand Cons. . . .	3 6*	—	3 0*	3 0*	3 0*	3 0*
Western Rand Est. . .	5 0	5 0*	5 0†	4 3*	4 0*	4 0
Witwatersrands . . .	—	—	17 6†	—	16 6†	16 6†
Wit. Deeps	14 0	14 0*	13 9	13 9*	13 9A	—
Wit. Townships . . .	30 0†	30 0†	30 0†	30 0†	30 0†	30 0†
Wolluters	2 1*	2 2*	2 3*	2 2*	2 3	2 2
West Springs	21 9*	—	21 6*	21 9†	21 0	21 0
Do. Options	—	—	5 6*	5 3	5 0	5 3†
Zaaiplaats Tins	7 2	6 10	7 0*	7 1	7 0*	7 0
Union 5 p.c.	—	£103*	£103½	£103*	£103½	£103½*

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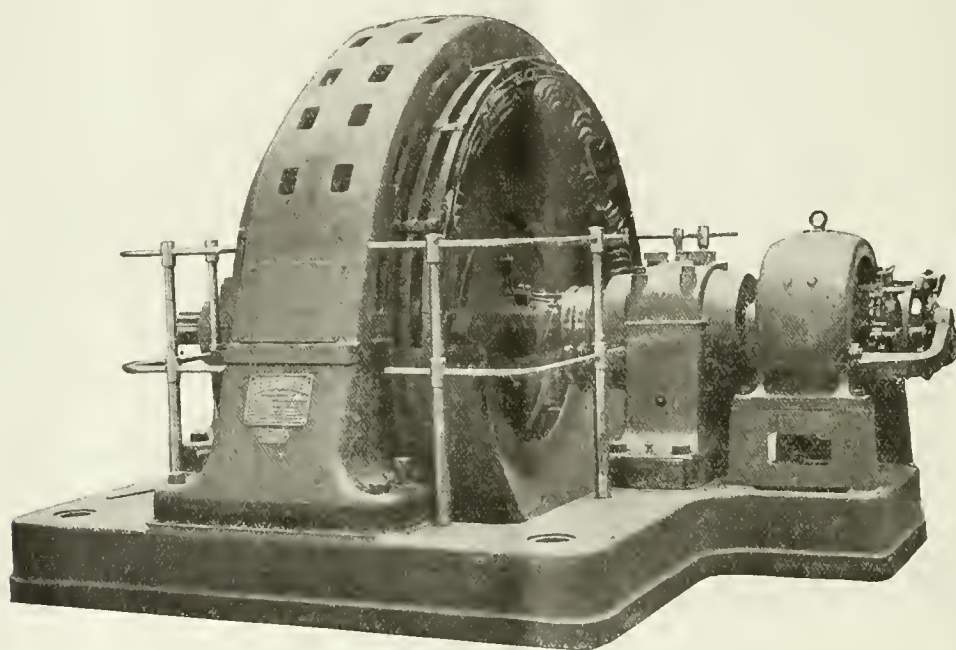
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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

More Hopeful Financial Feeling—Oils, Colours, Varnishes and Paints—Iron, Steel and Machinery—Timber and Roofing Iron—Electrical Goods.

On the authority of a leading bank manager, it is reported that the commercial world of Johannesburg has decidedly improved in its financial affairs during the past few months. It was further stated that business was again getting into legitimate grooves, as apart from the speculative element. These statements were confirmed in a measure by a commercial mining material broker. He said it was a good sign from a merchant's point of view that the mines are buying more and more sundries. In this respect it must be recognised that it will take many months to reduce the stores of the individual mines, more especially as the various groups transfer the extra surpluses from one mine to another. Whilst it is true that there are more indents for sundries, yet it is recognised that there is no outstanding or special buying; therefore, as the broker remarked, there is not sufficient business at present with the mines to keep the mining merchants healthy. The feeling, however, is a little brighter consequent upon the fair manner in which the various factors are placed before the Low-Grade Mines Commission. Naturally, much depends upon the results of this Commission as regards preventing some of the mines closing. In this respect it is not too much to say that the outlook is a little more hopeful. More particularly as the price of gold and its disposal have been brought within range of practical politics since the signing of the Peace Treaty.

OILS, COLOURS, VARNISHES AND PAINTS.

A leading firm's price list for next month will show several important increases in prices, because linseed oil is gradually increasing in value, as the best naked English is 10s. 5d. per gallon in London and is sold here to-day from merchant to contractor at 15s. per gallon. Indian and other linseed oils are cheaper, as the price in Johannesburg is for the raw article 8s. 6d. to 10s., and boiled 10s. to 10s. 6d. per gallon. Turps are also dearer, being 70s. for 2-4's and 77s. 6d. for 10-1's. There is a little mystery about the price of white lead, which can be put down at 65s. per 100 lbs. in the ordinary way, but it is known that big parcels have been booked at 60s. and even as low as 57s. 6d. In this connection it is said that one firm alone in Johannesburg has about 120 tons of white lead on hand. The American best salad oil is 135s. per case, which is a drop of 5s. since last week, as a small shipment recently arrived. South America, 110s.; and South African nut oil 70s., which is up 5s. a case on account of the Delagoa Bay factory having advanced its price in consequence of nuts having jumped from £22 to £42 a ton on the strength of orders being in the market for exporting them to London for the purpose of manufacturing margarine. Olive oil has reached the high price of 27s. 6d. to 30s. per gallon, owing to the increase in Spain and France in anticipation of the demand from the Central European Powers immediately Peace conditions come in force, when those Powers will be allowed to deal as a matter of course. Castor oil has also advanced, as the medicinal quality is 100s. per case, the crude from 75s. to 80s., and what is termed mineralised for the mines 45s. per case. One manager states that the worst part of all is that brushware has gone up 10 per cent. in England for toilet and painters' brushes, but household is only 5 per cent., all being manufactured from Russian bristles, but there is no alteration at present in the brush-

ware made with Chinese bristles. All these advances seem to be on account of the demand for paints and brushes for the purpose of renovating the paint after the lapse of practically five years, that is during the war period. Although there are no big sales or forward commitments for paints or such like, there is a lot of business, but builders and others are buying only small quantities, just sufficient for work contemplated, because they openly state they are waiting for lower prices. The manager in question considers they are wrong, as prices are heading for higher levels both in America and England. Another example is that turps are 58s. in New York, therefore he would not be surprised to see a quotation here for 2-4's at 80s. per case. Putty happens to be in superabundance and is sold in the ordinary way at 7½d. per lb. over the counter, but for big quantities, and maybe not quite so good quality, values vary down to 5½d. per lb.

IRON, STEEL AND MACHINERY.

There is a further small decline in imported iron and steel, simply because the British and American old orders supplies have been constantly arriving at the coast. Take, for example ordinary tool steel: this is being sold at 11d. per lb., whereas it costs about 1s. 2½d. to land in Johannesburg. In this respect an accountant states that this drop has been caused to realise cash at all costs. A merchant concerned remarked that this cannot go on for ever, as he had been paying salaries and wages during the last nine months and getting nothing in return.

Imported Iron and Steel.—Round small sizes of ¼ in., 55s.; ½ in., to ¾ in., 38s.; and larger sizes all round, 38s. per 100 lbs. (Dunswart price is 30s.) Imported angles, 4 in. x 4 in., 42s.; small size flats, 37s. 6d.; larger, 35s. Brass rods, 13s. per lb.; wire nails, ordinary price from merchant to retailer, 1 in., 55s.; 2 in., 50s.; 3 in., 45s.; 4 in., 42s. 6d.; 5 in., 40s.; 6 in., 37s. 6d. It is said that special lines of odd lots have been picked up at bargain prices at anything about 25 per cent. below before-mentioned quotations, but too much reliance must not be placed on a few isolated cases sold at the weekly auction sales.

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JOHANNESBURG.

The appearance of the second-hand machinery yards is getting barer as one after another the engines and boilers are repaired and burnished up, and the following week these seem to have disappeared and others taken their places. The demand comes from Rhodesia and as far north as the Belgian Congo, whilst the Natal coalfields are no mean factor in clearing many of these oddments out. At the present time the replacement of all kinds of power is far less than the demand. This is in consequence of no mines being dismantled of late.

Agricultural.—Agriculturists are freely buying ploughs, chiefly Canadian; also the Western Transvaalers are purchasing a good many windows, chiefly American. According to a cable received this week, it is stated that the strikes in Canada and America have delayed shipments of agricultural machinery, for what was promised in June, until August. In an interview with an agricultural implement merchant it was asked in a spirit of surprise why we were not manufacturing furrow ploughs in this country, as so far it seemed we were only making coulter and ploughshares. In that industry it seemed at one time they would launch out into making ploughs, if even only to a small extent. The merchant, however, said that in the ordinary way there was no chance at present for South Africa competing with Canada and America in agricultural implements.

TIMBER AND ROOFING IRON.

There is a further slight advance in timber, and it would seem that the prices are likely to go a trifle higher, as present quotations seem very firm, both here and at the coast. For example, on Tuesday a quotation for flooring was asked for from Capetown, when a reply came, 8½d. f.o.r. Capetown; and from Durban also the quotation was 8d. per ft. there and another 1d. railway carriage to Johannesburg. The Johannesburg prices for deals are 1s. 7d. and 1s. 8d. for ordinary lengths; floorings, 8½d. to 9d., and ceilings 6d. to 6½d. Our timber merchants make quotations for work to be placed in hand immediately or in the course of a fortnight, but beyond that there is no inclination from merchants to book forward, as stocks are not high in South Africa. The tendency in the Baltic is for prices to rise; freights are steady from there, and the rates of exchange between London, Norway and Sweden are about normal as compared with pre-war days. The price of galvanised iron of 24 gauge is 1s. 3½d. for the smallest lengths but 1s. 4d. was paid in the Exchange on Wednesday for 9 ft. and 10 ft. lengths, which are very scarce indeed. This last-named price is 1d. advance on the week and 2d. as compared with last month.

ELECTRICAL GOODS.

The delay in the forwarding of electrical goods from the coast, already referred to in these notes, still continues, to the annoyance and inconvenience of merchants, who have

now been expecting stocks for some three weeks past and are still awaiting same. The difficulty appears to be in the provision by the Railway Department of the requisite trucks. Consequently all electrical materials are very scarce indeed, more particularly tubing, of which Johannesburg appears to be absolutely bare. The general demand is good, but under the circumstances cannot be coped with. Country enquiries are also good, but business is, of course, limited owing to the scarcity of materials. Confirming our forecasts, lamps have receded 3d. and are now 2s. 9d., and, in view of the enormous stocks held in Johannesburg, may, now that the "Ring" no longer exists, go even lower in the near future.

TRADE NOTES.

Carbide is 60s. per 100 lbs. and lamps 11s. Petrol, 37s. 6d. to 38s. 6d. Paraffin, 22s. 6d. to 22s. 9d. wholesale; 24s. retail. There is quite a superabundance of envelopes, which are being sold at 4s. per 1,000 below cost. Brown paper is also 3½d. a lb. below cost. At one store Canadian white lead is being sold at 9d. a lb., whereas English is fetching 10½d. An Exchange man states that imported mild steel has been done at 33s. per 100 lbs. It is said that Australia has flooded our market with binder twine; this is being offered in Johannesburg at 45s. per bale, which costs 10s. more than that to land here. As an indication of what Pretoria is doing, Vryheid coke is being supplied to the pig iron works there; also the same company has secured the railway contract. The property market is hesitating, although the demand for residences about £1,000 is still excellent, but when they get near £2,000 and over business is sluggish and at times disappointing. The furniture trade is easier, owing chiefly to the returned military being pretty well supplied. The cartage people had a good time with moving and furniture sales at the end of June and beginning of July. By the way, there is a lot more stabling to let in town than formerly, presumably on account of the motor cars replacing horses.

South East Rand Activity.

The following circular, dated 12th May, has been issued to the shareholders of the New British Transvaal Mines, Ltd., by the secretary, Mr. Robt. B. Auckland: "Winchester House, Old Broad Street, E.C.2, 12th May, 1919.—The directors have the pleasure to inform shareholders that an agreement has been entered into for the acquisition by this company of an undivided one-half interest in a contract giving the sole right for a period of three years from 28th February 1919, to prospect the farm Rietveld No. 186, on the South-East Rand, and to purchase the gold mining rights thereof upon a basis calculated upon the size of the mynpacht and the number of discoverers' claims granted under the Gold Law, which should give the company a large profit upon its ultimate flotation. Your directors understand that the other half interest is likely to be taken up by another South African company with considerable liquid resources. The farm Rietveld is bounded by property held by the East Rand Mining Estates, the Spaarwater Mines (recently purchased by Messrs. Barnato Bros. and Sir Abe Bailey and upon which it is reported shaft sinking has already commenced), the Oceana Development and New Albion Companies, and carries the deep levels of the Van Ryn and Nigel Reefs. According to the reports and maps issued by Mr. W. E. Bleloch, who has done so much to bring this extension of the Far East Rand into prominence, it also contains the southern extension of the Main Reef series.

The company is already largely interested upon a share basis in the New Albion Transvaal Gold Mines, Ltd., Newdwarf Gold, Ltd., and various syndicates holding options over properties in the district, and in Rhodesia Consolidated, Ltd., holding 600 claims on the farm Vogelstruisbult, adjoining Daggafontein. It also possesses important interests in Mashonaland Consolidated and other Rhodesian companies, while its large holding in the Westralian Mines Development Syndicate is becoming increasingly valuable. The directors are of opinion that the time is opportune for increasing the financial resources of the company, and it is therefore proposed at an early date to make arrangements for placing the unissued capital. In accordance with promises already made by the Board, existing shareholders will have the right of participating to the extent of one half in any issue that may be made. The authorised capital of £100,000 is divided into 100,000 shares of 5s. each, of which 157,095 have been issued and 212,905 are available for subscription, representing at par a value of over £60,000." (The maps referred to in the above circular may be obtained on application to the secretary.)

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The Week's Meetings.

NEW JAGERSFONTEIN MINING AND EXPLORATION CO.

The thirty-first ordinary general meeting of shareholders in the New Jagersfontein Mining and Exploration Company, Limited, was held at the company's offices in Stockdale Street, Kimberley, on June 27. In the absence of the Chairman (Colonel Sir David Harris, K.C.M.G., V.D.; M.L.A.), Mr. F. Hirschhorn, the deputy chairman presided, and said, *inter alia*,

This is the fifth annual meeting of shareholders called since the war broke out, and the world is to be congratulated upon the fact that, after more than four years of hostilities, an armistice was signed in November last, followed by a conference, and that we are now upon the threshold of peace.

The effect of the outbreak of the war upon the diamond industry is still so fresh in our minds that it may seem to be unnecessary to refer to it; but a brief retrospect of what happened some time before and up to the commencement of hostilities, and subsequently, may not be out of place. You will remember that in 1912 and 1913 the diamond market was in a flourishing state. Towards the end of 1913, however, it was realised that stocks were accumulating in the hands of the producers, the Syndicate, other diamond merchants, and the trade generally, beyond what the market could absorb. The cause of this accumulation of stocks was felt to be over-production, and early in 1914 the position had become more acute, and as a result, and at the instance of the large producers, a conference was called in London (at which our company was represented by the Chairman) for the purpose of endeavouring to arrive at some arrangement to regulate the output of diamonds and maintain prices. At the annual meeting of this company held in 1915, the Chairman gave an account of the conclusions reached by that conference; these conclusions, however, could not be acted upon as the outbreak of the war prevented the proposals taking definite shape. We were, therefore, faced at the commencement of the war not only with the crisis caused by the armed conflict, but also with the existence of huge unabsorbed stocks of diamonds. The steps we adopted in closing down our mine and ceasing operations were unavoidably drastic; but with the knowledge we had of the situation of the diamond market no other option was left

to us, for had we continued to produce more diamonds and add to the stocks on hand, all confidence of the trade that things would eventually right themselves would have disappeared, and the position would have been aggravated. I think I can fairly claim, in the light of subsequent and present conditions, that the steps then taken have proved to have been perfectly justified; for, after almost an entire absence of sales during one year from the outbreak of war, the diamond market gradually revived, and we were enabled in 1916 to restart work at the mine on a moderate scale. Since then, due to the policy adopted, and a more firmly established control than ever before known, the diamond market has risen to its present flourishing condition.

I will now submit for your approval the directors' report and the financial statement for the year ended the 31st March, 1919, and in so doing I beg to make the following remarks. The balance sheet shows few alterations from last year's figures. The capital of £850,000 issued remains the same. The Special Reserve Fund of £175,000, which is sunk in our undertaking, is also the same as last year. The current liabilities of £290,357 5s. 4d. compare with £249,309 11s. 7d. in 1918, which means an increase of about £40,000. Against this, however, we have ample provision on the credit side under "Debtor, bills, and cash" of £320,454 7s. 4d., which item in last year's balance sheet only amounted to £243,806 18s. 2d. Under Suspense Profit Account we show unsold diamonds as per contra at cost, £33,936 5s., against £82,594 3s. 9d. The unappropriated balance brought forward from the Profit and Loss Account is £77,856 17s. 7d., which item in last year's accounts stood at £41,859. On the asset side of the balance sheet we find the property account practically unaltered, and the same applies to our investments. One of them, as you were informed last year, is a £20,000 interest in the South African Marine, Fire, and General Insurance Company, Ltd., and this I can tell you has been a very profitable investment—and of the greatest assistance in obtaining insurance of diamonds in transit when this was very difficult during the war.

The work of the mine has been carried on, under the able management of Mr. W. J. Pitchford, to our entire satisfaction. The conditions existing throughout the war period have frequently created almost insurmountable difficulties,

but Mr. Pitchford and his staff have invariably overcome them. Chief amongst them was the difficulty of obtaining a regular supply of mining stores and requisites. It was quite impossible to secure new plant, such as washing gear, which is badly needed, and it therefore became necessary to convert old washing machinery, with addition of crushers (which were on order, and which we were fortunate in getting delivered), into what is now called No. 13 direct treatment washing machine, which has been working for some time. In my comments on the Profit and Loss Account, I have already given you the number of loads hauled and washed during the year. Those washed, namely, 1,948,799 loads, consisted of 1,173,854 loads of maiden blue ground, and the balance of hopperings, hardbank, and mixed ground and tailings. The average yield per 100 loads from all sources was 8.72 carats. This is an increase of 1.25 carats per 100 loads compared with the previous fiscal year. We have also had a piece of very good fortune in the recovery of a fine blue-white stone weighing 288½ carats, which was picked up by a native on the line dump on the 4th of January, 1919. Since the closing of our books on the 31st March last, when this stone was taken in at the average cost of production, we have been able to sell this diamond to the Syndicate at a very handsome figure, and shareholders will derive the benefit of this transaction in the current financial year.

Never has the policy of regulating the output of diamonds and controlling the quantity placed on the market shown more substantial and beneficial results than during the last few years. It has had a steady effect, which has inspired confidence in the future of the industry; and in the benefits accruing not only do we as shareholders participate, but also the State. We have reason to be gratified with the success achieved, for the diamond market today is in a more prosperous condition than ever previously known. It has taken many years of advocacy to secure the co-operation of the large producers in this policy; and they have arrived at this desirable end largely by the weighty support and influence exercised by our biggest shareholder and colleague, Mr. S. B. Joel, during his visits to this country in 1915, and in 1916 and 1917. He can now look upon the consummation of his efforts, and of those who were associated with him, with the utmost satisfaction.

South African Engineers and the Public Service.

During question time in the Assembly last week, Mr. Schurink was informed by Ministers that four graduates in engineering of the Universities of Capetown and South Africa (Johannesburg) were employed in the Public Works Department, four in the post and telegraph office, and 12 in the Department of Railways and Harbours. Their salary in the first year was £180, rising by £20 annually in the post office to £260, and in the case of the other departments named to £460 in seven years.

Later Mr. Schurink (Lydenburg) moved that the Government be requested to consider the advisability of appointing a Commission during the recess to enquire into and report upon: (1) the extent to which the engineering branches of the public service and railways and harbours service can be recruited from the graduates in engineering of the South African universities; (2) the adequacy or otherwise of the inducements at present offered to graduates in engineering to enter the public service and railways and harbours service; and (3) the desirability of co-operation between the universities and the appointing bodies in regard to the appointment of engineering graduates in the public service and railways and harbours service. There was a great shortage of qualified engineers on the railways, he said, but so little encouragement was given to our young men that they went abroad. A good

many found lucrative posts as mining engineers, but there was very little prospect for other classes. The Minister of Railways said the Government was most anxious that all reasonable encouragement should be given to young South African engineers. Unfortunately this country did not offer sufficient scope for a large number of engineers. There were brilliant young men among South African youths, but in several cases they could not find employment here, and had to go to other countries. The Railways Department had fallen into line with the other departments, and raised the scale of pay. The number of mechanical engineers in the mechanical department of the railways was eight, and with assistants, draughtsmen, etc., the total was only thirty. He assured the House that, so far as he was aware, there was no loading of the scales against young South Africans. Since 1912 twenty young South Africans had been taken on in the engineering branch as against four from other countries, of which only one was left. There were 104 engineers in the whole Railway Department, and of these only 58 were on the fixed establishment. He was told that the students were quite satisfied with the augmented scales of salary. In these circumstances it seemed reasonable simply to refer the matter for report to the Public Service Commission. He hoped the mover would withdraw his motion.

Mr. Schurink agreed to do this, but Mr. C. W. Malan opposed the withdrawal, and the motion was then defeated by 51 votes to 19, the minority including, besides the Nationalists, Messrs. Schoeman, Oosthuizen, Creswell and Sampson.

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Notes and News.

The Mines and the Peace Holidays.

In connection with the peace celebration holidays on Saturday, August 2, Monday and Tuesday, August 4 and 5, the Chamber of Mines has recommended to its gold and coal mining members that on Monday, August 4, the same procedure should be followed as was adopted for Armistice Day, viz., that employees who work be paid double pay, and that those who do not work be paid single pay; a similar procedure being applied to natives. It is intended that on that day mining operations should be practically suspended, in the same way as they are suspended on Christmas Day and Good Friday. It is not practicable for the industry in its critical state to suspend operations on all three days; but on Saturday, August 2, and Tuesday, August 5, those employees who apply for leave without pay will, as far as possible, be given such leave.

* * * *

New Kleinfontein.

The following cable has been sent to the London office of the New Kleinfontein Company: "Owing to the impossibility, under present conditions, of keeping both reduction works economically employed, the board of directors, acting on the advice of the company's technical advisers, has decided temporarily to close down the Apex reduction works. The Kleinfontein plant has a capacity of 54,000 tons per month, and it is not anticipated that this tonnage will be exceeded for some time to come. Mining operations in Apex will continue as at present, and development in this section will be pushed on as speedily as possible."

* * * *

Miners' Origins.

During the course of his evidence before the Low Grade Mines Commission on Thursday, Mr. E. H. Clifford expressed the view that if white men were thrown out of work because of the abolition of the colour bar, it would be largely a Government responsibility, because Government regulations had largely created the occupations those men followed in the mines. These men came to the mines from various other occupations; and to illustrate this, the witness referred to a list of 46 men who had been in his mine less than a year. These included a railwayman, a barman, a drayman, an oculist, five reduction workers, a carpenter, a municipal servant, a policeman, and a toymaker.

* * * *

Wanderer (Selukwe) Gold to Close.

The following is a summary of the manager's report for May of the Wanderer (Selukwe) Gold Mines, Ltd.: "The native labour position is very serious, and under these circumstances it is difficult to continue operations on a profitable basis from a low-grade ore; we must therefore anticipate the early closing down of the mine."

* * * *

Relief for Indian Mines.

Messrs. John Taylor & Sons, the managers, announce that negotiations have now been concluded whereby approximately one-half of the monthly production of gold by the Mysore Gold Mining Co., Ltd., the Champion Reef Gold Mining Co. of India, Ltd., the Ooregun Gold Mining Co. of India, Ltd., the Nundydroog Co., Ltd., the Balaghat Gold Mining Co., Ltd., and the North Anantapur Gold Mines, Ltd., will be disposed of to the Indian Government, in India, the value of such proportion representing approximately the local monthly expenditure, and that the companies will thereby be relieved of the heavy loss suffered in making remittances from England to India.

* * * *

Lonely Reef.

Mr. J. D. Hope, M.P., who is a director of the Globe and Phoenix Gold Mining Co., and a shareholder in the Lonely Reef Gold Mining Co., speaking at the meeting of the latter company, made this remarkable statement: "Following the fortunes of this company as I have done for some time, it looks to me as if we were going to have a second Globe and Phoenix." Certainly no one who reads the report of the

proceedings at the meeting can come to any other conclusion than that the prospects at the present time are extremely good. Mr. Kingston's report on the developments provides justification for Mr. Hope's anticipations. The ore values have consistently increased as depth has been attained, and this justifies a very hopeful view being taken of the future of the mine. On December 31, 1917, the ore reserves amounted to 145,616 tons, of the value of 18'69 dwts.; on December 31, 1918, they were 176,097 tons, of an average value of 24'10 dwts., while on March 31, 1919, they were 182,788 tons, of an average value of 24'36 dwts. The company is in a very strong financial position, and the prospects of increased dividends during the present year are very good.

* * * *

Modder Deep Settlement.

The men affected by the sectional strike at the Modder Deep G.M. returned to work on Monday, and the machinery of investigation and inquiry into disputes came into operation at once, and as a result a full settlement of the difficulty—which arose over certain allegations against a shift boss—has been arrived at. The enquiry commenced after the men had returned to work on Monday morning, and lasted till 5.30 in the afternoon. The Consulting Engineer (Mr. Anderson), the General Manager (Mr. Hill), and the Underground Manager were present on behalf of the employers, while four men represented the Benoni Branch of the S.A. Mine Workers' Union, and four more the Works Committee. The Federation Steward presided. After the matter had been thoroughly gone into, it was agreed that there was a certain amount of ground for the men's complaint, and the management agreed to the removal of the shift boss concerned to another class of work on the mine. The men, it was understood, were quite prepared to work with the shift boss as a fellow-workman, but not as an official; nor did they wish him victimised by his removal from the mine. The matter having been cleared up on the lines indicated, the eleven men in the section mainly concerned—who had not resumed when their fellow-workers did on Monday morning—went down, so that the property is now working as usual.

* * * *

Rouxville Diamonds.

We understand that the Consolidated Gold Fields of South Africa have acquired a controlling interest in a company recently registered in the O.F.S. under the above title. The capital of the company is £200,000, viz., 200,000 shares of £1 each, of which £75,000 has been subscribed in cash for the purchase of the freehold of farm Klipfontein and for working capital. The working capital shares consist of 37,500 ordinary shares and 37,500 "A" shares, which latter carry a preference dividend until 100 per cent. has been paid thereon, when they become ordinary shares and then rank in all respects with the 37,500 ordinary shares. The "A" shares are not marketable for six months from the date of registration of the company. 25,000 ordinary shares remain in reserve, over which the Consolidated Gold Fields have an option at 25s. for one year. The farm Klipfontein is 4,227 acres in extent, in respect of which the owner's and discoverer's claims will amount to 150 claims. In addition the company has an option over the mineral rights of Betjes Kraal and Poortje, respectively 4,523 acres and 6,610 acres in extent, for a period which should suffice to test these areas with a view to their acquisition. These farms adjoin the company's property on the north bank of the Orange River near Aliwal North. Up to date over £37,000 worth of diamonds of fine quality have been produced from a few pot-holes on the Klipfontein property. The reports made on behalf of the Consolidated Gold Fields being sufficiently encouraging to warrant the exploitation of the Klipfontein area and exploratory work on the other properties under option, operations will be started at an early date. The first directors of the company are four nominees of the Consolidated Gold Fields, Messrs. E. Brayshaw, L. Lowe and another not yet appointed.

S.A.I. of E. Presidential Address.

Mr. W. Elsdon-Dew, M.I.E.E., in his inaugural address as President of the South African Institution of Engineers, at the first monthly meeting of the 1919-1920 session in the Chamber of Mines on Wednesday, alluded to the industrial and economic situation, and said they spoke of labour and labour demands with bated breath; but labour leaders realised, or should do so, that with all those demands which might upset the whole economic position, that a high wage scale did no good if labour was not at work, and if temporarily successful advances were gained in wage scales they bore no ultimate benefit to the community at large or to oneself in particular if there was no labour to do. It was evident that labour did not realise that the total dividend paid in mining, and any industrial concern, was but a very small percentage of the total turnover which had to be paid out in wages to workmen. The circulation of money carried far more important benefits to the community at large than the individual gain which workmen might obtain by small increases in pay if ultimately such rises in the pay of workmen swamped the concern so that it had to close its business. Until labour had learned, and was able to weigh-up, what such changes in wages bills would ultimately mean to the industry concerned, whether it be mining, manufacturing or agricultural, all misunderstandings would lead them to difficult positions, and it behoved them to be able to discuss the true position without fear or favour, and it appeared to him that until a lot more was learned in so far as the difficulties of South Africa were concerned, they would be having continual unrest.

* * * *

Village Deep.

Giving evidence this week before the Low-Grade Mines Commission, Mr. J. Whitehouse, manager of the Village Deep, Ltd., said: "The Village Deep, Ltd., has been a producing mine during the last 14½ years, crushing operations having commenced on the 2nd of January, 1905. Since that time 7,029,427 tons have been milled, from which gold to the value of £9,870,067 has been recovered. The working expenditure for this period amounted to £7,307,736. A plan submitted shows the portion of the mine which is now worked out, and that remaining intact. Up to the end of 1918 181 claims had been exhausted, and there remain a further 417 claims still to be worked, to which may be added considerably more ground should it be possible to continue operations. The unworked claims, as at present held, represent a tonnage of approximately 12,828,199." In concluding his statement, Mr. Whitehouse said: "The expenses which are practically invariable between a tonnage of 45,000 and 55,000—the latter figure being the full crushing capacity of the mill—amount at the present time to £44,232, which based on a tonnage of 47,200, which is the tonnage crushed during the month of May, amounts to 18s. 9d. per ton, the total cost for that month being 26s. 2d. per ton and the profit £5,840. If instead of 47,200 tons, a tonnage of 54,000 had been milled at a grade of 28s., which is slightly below that actually recovered, the revenue would have been increased by £9,520, and the costs by £2,520, showing an increase in profit of £7,000 for the month. A reduction in the costs of 2s. 5d. per ton milled would have been effected by this increase in tonnage, and the costs would then have been 23s. 9d. From these figures the importance of milling the full tonnage for which the mine is equipped will be apparent," continued the witness, "and this is only possible when the mine has a strong native labour force and when that force is fully occupied during each day's shift, which is not possible under present conditions. It might be mentioned here that no relief can be expected from the replacement of hammer boys by machines, since the latter for many years have been used almost exclusively for the breaking of ground. Attention has been drawn to the disabilities under which this mine is working, and in the support of workings, and hoisting, no relief can be expected. The cost of pumping will increase as some of the neighbouring shallower properties work out, and it will be necessary that some relief should be afforded by amending the mining regulations to meet these extra burdens."

Modder Deep.

An extraordinary general meeting of the Modderfontein Deep Levels was held on Thursday. Mr. V. J. Ronketti presided, and stated: The notice convening this meeting has been in your hands for fully two months, and the business to be transacted has doubtless received your careful consideration. The reasons for the decision of your directors are set out in the notice, and there is little that I can add by way of further explanation. I may, however, substantiate the statement that there is a large number of small shareholders in the company, mainly resident in the United Kingdom, by giving you the information that in the United Kingdom there are nearly 2,500 shareholders holding between them a total of approximately 155,000 shares, or an average of about 60 per shareholder. The advance in the Stock Exchange quotation of the shares has brought with it an increasing restriction of their negotiability, and this restricted negotiability is a cause of hardship to the small shareholders, who frequently experience difficulty when they wish to deal in their shares. It is mainly with the object of removing this source of hardship that your directors have decided to submit to you the proposal to sub-divide the existing £1 shares of the company into shares of the nominal value of 5s. each, and I think it will be clear to you that the proposal, if adopted, will be of particular benefit in this direction. If any shareholder desires further information or explanations regarding any points connected with the proposal, I shall be pleased to answer questions; meanwhile I beg to move as a special resolution: "That each of the 500,000 shares of the company of £1 each, fully paid up, be divided into four shares of 5s. each, whereon 5s. is credited as paid up, and that the resulting shares be renumbered accordingly." Mr. Boyd seconded, and the resolution was carried. The Chairman then stated that the resolution would be submitted for confirmation at a further extraordinary general meeting convened for August 9.

* * * *

New Transvaal Chemical.

At the twenty-third ordinary general meeting of the New Transvaal Chemical Co., Ltd., which was held recently at Winchester House, Old Broad Street, London, E.C., Baron Emile B. d'Erlanger (the chairman) presided, and said, *inter alia*:—We have had another very prosperous year, and can therefore both congratulate and are under the duty of thanking our staff in Johannesburg and in Natal for the strenuous work and zeal they have displayed on our behalf. We have had a succession of very prosperous years, which are really only a continuation of the long record of prosperity of this company ever since its inception. As in all other human affairs, in the course of some twenty-five years we have had one or two bad years, but you cannot expect things to be always at the very height of prosperity. I am looking forward to a little falling off next year, although I do not think it will affect the shareholders very much. It must be taken into account that at the time the armistice was proclaimed those engaged in all industrial enterprises—and all industrial enterprises live one upon the other—had made their preparations for the continuance of the war, and had stocked themselves so as to be safeguarded against the perils of the future. Therefore we must expect the people who had been buying out candles and soap to live on their stocks for a certain time, and to exhaust them before entering into any new large purchases and commitments. The falling off in all businesses of this kind was very great immediately after the armistice, amounting in some cases to even 50 per cent. or more, but the ground is gradually being recovered, and sales are again creeping up. I have used the word "creeping," though I might say it is faster than creeping. I am convinced that this company is assured of a great many prosperous years, and that the firm of Levers will reap all the benefit they deserve from their enterprise in joining hands with us.

TOPICS OF THE WEEK.**MORE FACTS FOR THE LOW GRADE MINES COMMISSION.**

MORE valuable facts were laid before the Low-Grade Mines Commission this week. On Wednesday Mr. J. Whitehouse, General Manager of the Village Deep, and on Thursday Mr. E. H. Clifford, gave evidence. In his capacity of Consulting Engineer to the E.R.P.M., Mr. Clifford had a very serious statement to make. In the course of his evidence he declared that the East Rand Proprietary Mines would not survive the year 1920 "unless a radical change takes place in the attitude of the Government and the white workers." Mr. Clifford suggested that means of obviating this were the relaxation of the colour bar, the increasing of the labour force, and the securing of greater efficiency among the workers. As to the colour bar, the witness advocated giving blasting certificates to properly qualified natives, and also allowing those with proper qualifications to act as gangers. Otherwise, Mr. Clifford said, the E.R.P.M. would have to close down by the end of next year, and he added that if that were so, water troubles would eventually close down all the mines between the E.R.P.M. and the Treasury. The population affected if the E.R.P.M. closed down would be approximately a quarter of the Reef; and the Government would lose in indirect taxation probably a million a year. Mr. Clifford did not advocate the complete obliteration of the colour bar, but he thought that if the colour bar was modified in certain directions there would be a great deal more employment for white men. "There will always be a colour bar," he said. "Race prejudice will always constitute a colour bar to some extent." Asked if he did not think the removal of the colour bar would not be taken advantage of by the companies to replace the white miner and have, say, about one white man on a level, Mr. Clifford said: "I think that would probably be the effect. That is the whole point—that a mine like the E.R.P.M. is not able to pay all these wages, and if it is to carry on at all its expenditure must be reduced, and one way of reducing it and still operating the mine is unfortunately at the expense of the white man." Mr. Clifford went on to explain that the colour bar had always been with them, but it had been made tighter and tighter, and he presumed the Government was actuated by the desire to prevent accidents. Mr. Clifford stated in answer to other questions that the function of a native with a blasting ticket would be rather different from that of the white man now. The native would do all the work himself, and not supervise other boys, while an advantage over and above the financial saving would be the extra drilling time the boy would have. Instead of 4½ hours' drilling time as at present, he would be able to put in a decent seven hours' shift—and real work. This would represent a tremendous increase in output. Of the three proposals he had put forward, the witness said the addition to the labour force would have the greatest immediate effect—that they must have at once. In giving evidence on the preceding day, Mr. J. Whitehouse brought out another point about the colour bar very clearly. *Inter alia*, he said: "Perhaps the most serious disadvantage under which the mine is working to-day is that caused by the general dissatisfaction amongst the native employees, which has manifested itself very seriously during the last few months. This has not only resulted in a falling off in labour strength, but those natives remaining at work are curtailing their efforts, and it is with difficulty that the better miners are able to obtain results. This attitude is apparently due to their having realised that their scope underground is extremely limited, and that there is no opportunity for the more intelligent amongst them to rise beyond the lowest scale of underground employment." It will be seen from these few extracts from the evidence that there seems to be general agreement among those best fitted to judge in regard to what should be done to save the low-grade mines. The question now is, how soon can the Government be persuaded to take some definite action?

THE COAL FIELDS OF SOUTH AFRICA.

I.—The Witbank Field, Witbank, T. & D. B. & Station Collieries.

[By a Special Correspondent.]

The prosperity of a country depends in large degree on the prosperity of its coal fields. The Union of South Africa contains immense areas of excellent coal, and South Africa can produce coal more cheaply than any other country in the world. No other country gives such good value—or anywhere near such good value—in coal for the money expended on winning it as South Africa does. These facts are only vaguely appreciated in South Africa, or in Europe, or in Asia, or in South America, where big markets are awaiting capture. Our collieries have never yet come into their own. But there are signs that interest is being slowly but surely aroused in South Africa's immense and almost virgin coal fields, and the present crisis in the coal trade in England will tend to draw increased attention to our collieries. Sir Percy Fitzpatrick, speaking at a luncheon in the House of Commons to the overseas representatives the other day, referred to the coal crisis. He pointed out that millions of tons could be produced at the pit mouth in South Africa at from seven shillings per ton downwards, compared with four times the price in England. In a few weeks' time the "S.A. Mining and Engineering Journal" will publish a special supplement which will deal with all aspects of the South African coal industry, and in the meantime the following notes on the present positions of our leading collieries are published. These short articles will be continued in subsequent issues. The following account (which will be greatly amplified in our forthcoming special coal supplement) of some of the coal mines of the Witbank area has been compiled by a representative of this journal, who visited the Witbank field a few days ago.

A GROWING CENTRE.

Witbank, the centre of the Transvaal's principal coal fields, is situated in the heart of a very important and busy coal-producing area, which is in the near future destined to become an even more vital centre than it is at present. The two leading coal properties of the district are the Witbank and the Transvaal and Delagoa Bay Collieries, the former situated at Witbank Station and the latter about five miles distant from Witbank.

WITBANK COLLIERY.

The Witbank Colliery is producing from two main pits, the colliery situated to the south of the main plant and the Outspan mine. No coal is now being hoisted from underground, all the coal won being transported by mechanical haulage to the main plants where it is fed direct into railway trucks. The Witbank Company's workings now extend over a very large area of ground and the mechanical haulages are of tremendous length. The coal seams on this property lie at a depth of about 90 feet, and the coal is hauled to the treatment plants, which are of very simple design. The coal goes through jiggers and over conveyor belts, and the round coal is then fed straight into the railway trucks. In the Witbank Colliery the coal is cut by means of air-driven Siskol and Hardiax machines and the company is also employing 3¼ inch Ingersoll rock drills fitted with cutting blades and traversing along an arc base to which the machines are fitted. It is intended to extend the employment of these Ingersoll machines and also to employ jackhammers extensively. In the Outspan mine electrically driven Sullivan coal cutting plant is employed. The capacity of the Witbank plant is about 2,200 tons per day, and that of the Outspan Colliery about 1,800 tons, but the output is of course limited by the truck capacity available on the railways and by the complement of native labourers available. The Witbank Company has recently resumed the production of tar, and taking advantage of the present high price of this by-product has installed a plant of 32 retorts, whilst a duplicate set is on the property awaiting installation. This equipment commenced work early in

June, and although the company is at present producing tar, it is to-day primarily a testing plant designed to determine capacity and the grade of tar produced.

NATIVE LOCATION.

The native labour force of this colliery is well housed in a large native location consisting of a number of rondavels. The rondavels are well built and well thatched, and although not expensive in construction are most popular with the "boys," large numbers of whom are married and who prefer the privacy and domesticity of the rondavels to the compound system.

THE T. AND D. B. PITS.

The Transvaal and Delagoa Bay Investment Company is producing coal from two pits—the No. 1, or old, plant situated about five miles from Witbank, and the No. 2 plant which is newer and further distant. The No. 2 plant has a capacity of 55,000 to 60,000 tons per month and the No. 1 30,000 tons or over, making a combined capacity for the two plants of about 90,000 tons per month, or well over a million tons per annum. As in the case of Witbank, and in fact of all other South African coal mines, the output is determined by the number of railway trucks available for transport of the product and by the strength of the native labour force. There are at present sufficient natives to secure the maximum output, but in point of fact this has never yet been secured, 77,000 tons being approximately the largest output ever obtained in any one month. In June of this year the production was about 75,000 tons, but this month (July) the output will be a great deal less on account of the acute shortage of trucks. An interesting feature at the No. 1 pit is a repairs shop, which is owned by an enterprising gentleman who has the company's coal haulage and locomotive maintenance contracts and who has his own shop and machines for repair work. The T. and D.B. Company employs at present about 1,300 natives and has an admirable system of rondavel locations. This company was, we understand, the pioneer of the rondavel scheme for housing natives in this district. The bunker capacity at the mine is over 2,000 tons. About one-third of coal produced at this colliery is "smalls."

A PRIVATE ENTERPRISE.

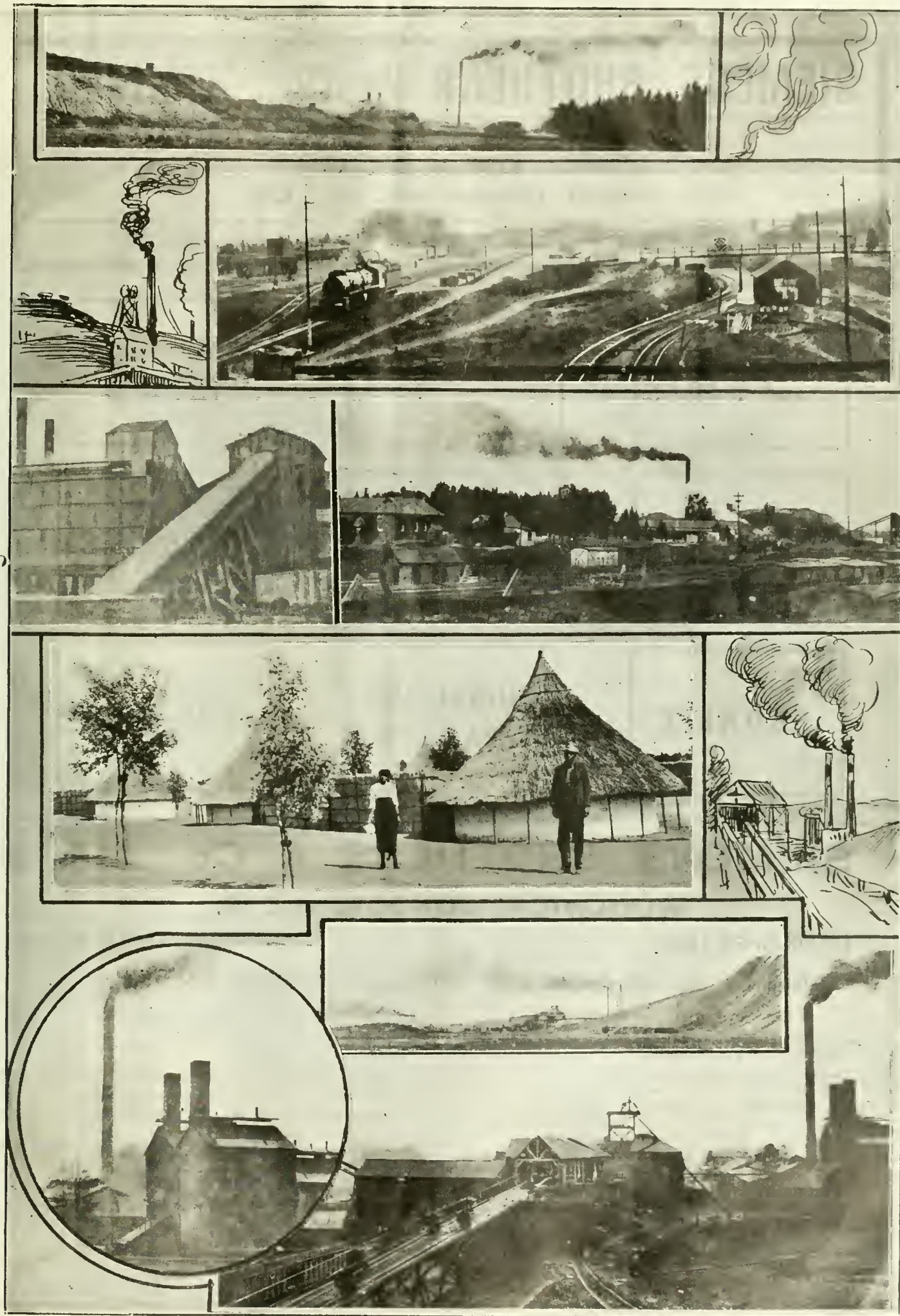
Most of the coal cutting is done by hand, but two electric chain cutters (Jeffery and Sullivan) are in use, and it is intended to equip the mine throughout with this type of cutter. The Station Colliery is a privately owned concern situated close to Witbank Station and loads its coal direct on to the railway line. This company is now engaged on installing a small tar plant at the property and the concern appears to be a progressive enterprise.

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LATEST NEWS FROM THE DIAMOND FIELDS.

A Survey of the Position at Several Properties which are now Engaging Attention. The Strength of the Diamond Market.

LATEST advices from London are emphatic as to the prosperous position of the diamond mining industry. The demand for diamonds continues to exceed the supply, and all indications point to at least a maintenance of present prices for some considerable time to come. The conditions created by the war have greatly enhanced the value of gem stones, not depreciated their worth, and in a great portion of disorganised Europe people are investing their savings in diamonds as an easily portable means of wealth. It is interesting to note that in the annual report of the Central Mining and Investment Corporation just issued it is shown that this company has increased its investments in diamond shares.

ROUXVILLE DIAMONDS.

We understand that a company with a capital of £200,000 has been formed in Johannesburg to acquire and exploit certain diamondiferous areas in the Rouxville area of the Aliwal North district. The flotation is dealt with more fully in another part of this issue.

COMPOUND DIAMONDS.

This syndicate is prospecting along the same line of country as that on which the Monteleo Company is operating and is reported to be obtaining encouraging results. The capital of the syndicate is £5,133 in 41,065 shares of a



THE CROWN DIAMONDS WASHING PLANT.

FRANK SMITH DIAMONDS.

Apropos of the note appearing in our last issue on the Frank Smith diamond mine, it is interesting to observe the following in the issue of the *Financial Times* to hand by this mail: "According to a market report, a reconstruction of the Frank Smith Diamond Estates and Exploration Company is impending under the auspices of Messrs. Barnato and the Johannesburg Consolidated Investment Company. The proposed scheme, it is stated, will provide £100,000 cash, and leave the issued capital almost the same as at present. A yield is reckoned upon of four carats per hundred loads, valued at £5 per carat."

nominal value of 2s. 6d. each. The directors of the concern are Messrs. J. E. Spence, E. W. Matthews, Gordon Beves, M. A. Zoccola, L. A. Moffatt and J. T. Amery.

SOUTH-WEST DIAMONDS.

We understand that this company has recently received advice to the effect that washing with one machine only on a portion of the company's land areas has resulted in a very satisfactory recovery of diamonds from a comparatively small quantity of ground treated. This company is understood to have other business completed or pending which will be beneficial to the concern.

Rhodesia Mining and Investment.

The Rhodesia Gold Mining and Investment Co., Ltd., made a profit last year of £12,506, as against £4,405 the year before. This profit has been carried forward and the amount now standing at the credit of profit and loss account is £55,412. The company possesses assets of improving value, which should bring in good returns in the near future

and enable the directors to pay dividends. Its large holding in the Lonely Reef Co. is alone of very great value as soon as the reconstruction scheme is finally through. The company has purchased the Huntsman mine upon which Mr. Kingstone has favourably reported.

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THE RAND'S NEW SHAFTS.

Some Colossal Undertakings.—Confidence the Industry's Inherent Soundness, despite Government and Labour Demands.

DESPITE the depressed state of the Rand gold mining industry resulting from the burden of war costs and almost paralysing taxation, several shafts are now in process of sinking at various points along the Reef, and this fact encourages one in the belief that the end of the gold mining industry of the Witwatersrand is still a long way off provided a reasonable attitude is adopted by the Government and Labour towards the mining companies. To sink a shaft to a vertical depth of 7,000 feet before winning a single ounce of gold therefrom is a huge and costly undertaking and one which requires considerable pluck on the part of the board of directors who are responsible to the shareholders for the expenditure of such a large sum of money as a mile and a quarter of non-productive shaft sinking requires.

THE CITY DEEP SHAFT.

A shaft calculated to strike the reef at this depth has, however, recently been commenced by the City Deep, Ltd. This shaft constitutes the most ambitious undertaking in gold mining that has ever been attempted. The development work which will in course of time be undertaken from this shaft and also from the new deep level shaft of the Crown Mines, which is expected to intersect the Main Reef series at 5,000 feet, will have a most profound influence on the whole of the Central Rand area. It can, in fact, be said that the mining operations of that part of the Witwatersrand gold fields which lies in the immediate vicinity of Johannesburg will ten years hence depend mainly on the results which will be obtained in the workings of which these two shafts will form the principal arteries of the deeper deeps of the Central Witwatersrand. The City Deep shaft will easily be the deepest shaft of any gold mine in the

world; it will, in fact, in all probability be the deepest shaft of any mine. Both the City Deep and Crown Mines shafts are circular and 20 feet in diameter. The Modder B. shaft, sinking of which was commenced a month or two ago, will be of the same shape and dimension, but will intersect the reef much nearer the surface, the estimate being 1,800 feet. The Central Mining/Rand Mines group is also engaged in sinking a shaft at the Durban Roodepoort Deep. In the case of this property the shaft is circular and 18 feet in diameter and is expected to intersect the conglomerate beds at 3,000 feet.

FAR EAST AND WEST RAND SINKINGS.

Other shafts in course of sinking on the Far East Rand are at the Modder East, Geduld, Springs Mines, West Springs (two), and New State Areas (two), whilst another vertical shaft is in contemplation for the Daggafontein Mines. Further south the Sub Nigel is sinking, and before long the House of Barnato will be engaged in probing into the depths of the farm Spaarwater of the Lace Proprietary. Randfontein Central too is engaged on shaft sinking, and as we have stated in recent issues of this journal, there is a probability of shaft sinking being started on the Western Rand Estates in the near future. These shafts will in the course of the next few years prove essential feeders of the gold mills of the Rand. They are being sunk during a period of depression but at least they indicate the confidence of the controlling mining houses in the persistence of the auriferous conglomerates in depth, and it is ardently to be hoped that when they come upon the reef the gold mining industry will be less of a milch cow for the whole of the sub-continent than it is to-day.

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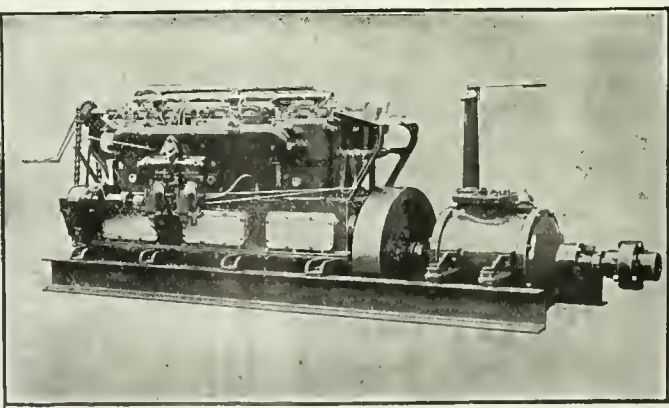
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THE YEAR WITH THE CENTRAL MINING CORPORATION.

Profit of Nearly £500,000 Allows of 10s. Dividend—Well Distributed Assets Assure Successful Future—Mines of the Group Crush 16,000,000 Tons per Annum.

THE directors of the Central Mining and Investment Corporation, Ltd., in the annual report for the year ending 31st December, 1918, state, *inter alia*:—The capital of the corporation remains unchanged at £3,400,000, divided into 425,000 shares of £8 each. The accounts submitted show a profit of £397,073 0s. 1d., to which has to be added the amount brought forward from the 31st December, 1917, of £99,953 7s. 5d., making a total of £497,026 7s. 6d. Two dividends, each of 4s. per share, free of income tax, declared during the year, and paid in July, 1918, and January, 1919, respectively, absorbed £170,000. The directors now recommend the declaration of a final dividend of 2s. per share, free of income tax, making 10s. for the year, £42,500; the transfer to reserve, raising this fund to £450,000, of £150,000; the establishment of a "Staff Pension and Benefit Fund" by an initial allocation of £10,000; leaving a balance to be carried forward of £124,526 7s. 6d. The holdings are entered at or under market prices ruling at the end of December, 1918. Unquoted interests, representing a total of £1,079,164, or about 18.76 per cent. of the investments, have been valued on a conservative basis, and include, as in the previous year, £172,798 for enemy securities. The increase, compared with 1917, is due to acquisition of base metal and industrial interests in this country, as well as investments of less importance in the latter category in South Africa. Liabilities, it will be observed, have decreased. The holding of British Treasury Bills has been reduced, but on the other hand substantial amounts were subscribed to the various issues of National War Bonds. The proceeds of maturing War Expenditure Certificates have been invested in new undertakings. Business in gold mining shares was restricted. In South Africa, however, a marked development took place in industrial enterprise. The value of land appreciated and agricultural undertakings expanded. In Great Britain industrial activity revived in many directions. The gold output of the Witwatersrand again shrunk below that of the previous year, and the profits and dividends of many of the mines suffered severely. The full weight of the rise in cost of production, the shortage of native labour, and the difficulties in securing mining supplies, made themselves felt. Moreover, heavy floods early in the year and the influenza epidemic in the autumn laid additional temporary burdens upon the industry. South Africa was not immune from the industrial unrest prevailing in other parts of the world. Sir Evelyn Wallers, one of your directors, in his capacity as President of the Chamber of Mines, devoted much care and attention to the problems involved, and, thanks to his endeavours, stoppages of work and acute disturbances were avoided. The Transvaal Provincial Council imposed a tax upon mining profits, which the mining industry considered in conflict with the Act of Union, and it was decided to test the matter at law. It is still *sub judice*. As a serious question of fiscal policy is involved the Union Parliament will assuredly deal with it, and an equitable decision may be looked for with some confidence. Efforts to secure for the gold mines some relief from the burdens caused by the war were unsuccessful. The question of payment for their product at favourable rates of exchange on Allied or neutral markets during the war was the subject of negotiation, and was submitted for the consideration of a Commission appointed by His Majesty's Government, whose report was adverse. The cessation of hostilities has revived the matter in a rather different form, and it is expected some benefit in this connection may result. Gold realisation charges have been considerably reduced since the 1st of January last, but are still above pre-war rates. The Corporation's mining interests have, on balance, though not to a large extent, been increased. During the year the western part of the farm Rietfontein No. 14 was offered for tender by the Government of the Union of South Africa, as a result of which a mining lease

of this area was granted to the Anglo-American Corporation of South Africa. It has since been floated under the name of West Springs, Ltd., in which company your Corporation took a substantial interest. Your holding in diamond mining shares has been increased. The output of diamonds remains well below the pre-war level, but throughout the year there was a good demand for the production at satisfactory prices. Encouraging reports were received from our geologist and engineers regarding the lead-zinc deposit of the Rhodesia Broken Hill Development Company, Ltd. Since the close of the financial year Treasury sanction has been obtained for the issue of new shares, and the reserve shares under option to your Corporation have been taken up under the terms of the agreement referred to last year. No change has taken place in your holding in West African shares beyond the practical completion of the liquidation of West African Mines, Ltd.

OTHER HOLDINGS.

The Magadi Soda Company is now producing soda ash of high quality at the Lake, and the manufacture of caustic soda has been commenced at its works at Calcutta. Since the close of your financial year the company has made an issue of £500,000 6 per cent. convertible debentures, in which your Corporation has taken a moderate interest. The loan previously made to the company has been repaid. Your interest in Trinidad Leaseholds, Ltd., has been increased during the year. The company continues to make very satisfactory progress. The output for the year to 30th June, 1918, shows a large expansion over the previous twelve months. After meeting all charges and providing fully for depreciation, the net profit for the company's last financial year amounted to £183,316, out of which a first dividend of 10 per cent., absorbing £69,950, was distributed in March last. At a meeting held on the 30th May it was decided to increase the company's nominal capital to £1,500,000, and to issue 349,750 shares to shareholders at 45s. each. The issue has been underwritten by this Corporation, and the proceeds will be employed in carrying out the extension of the company's operations forecasted by its chairman at the last annual general meeting and in the repayment of advances made by the Corporation. Your interest in the Anglo-Colombian Development Company has been realised at a profit over balance-sheet prices. A loan was made by the Corporation to the British Cellulose and Chemical Manufacturing (Parent) Company, Ltd., under an agreement conferring the right to subscribe for a certain share interest. This right was not exercised. The loan has been partly repaid, and the balance, which is secured by debenture, is to be liquidated shortly. A controlling interest in the firm of Williams, Foster & Co., and Pascoe, Grenfell & Sons, Ltd., has been acquired from Messrs. Henry R. Merton & Co., Ltd. (in liquidation). The business is chiefly concerned with the manufacture of copper, and the works rank among the more important of that order in the country. Representatives of the Corporation have joined the board. Mr. Mills remains the company's able and experienced managing director. Your chairman was invited to join the board of the British Metal Corporation, Ltd., at its inception, and the corporation has taken a substantial share in the working capital of this important undertaking.

Zaaiplaats Tin.

The Zaaiplaats returns for the month of June, 1919, are as under: Days run, 25; concentrates won, 47 tons; estimated profit for the month, excluding Government taxes and directors' fees, £1,658 17s. 8d.; capital expenditure, £1,166 1s.

THE OUTLOOK FOR THE VILLAGE MAIN REEF.

Points from the Annual Report—Distribution of Village Deep Shares.

THE directors of the Village Main Reef G.M. Co., Ltd., in their report for the year ending 31st December, 1918, show that the year's operations realised a net profit of £59,270 8s. 11d., to which has been added the balance brought forward from last year, £180,999 12s., making a total of £240,270 0s. 11d. This sum has been dealt with as follows: Amount written off investments, £4,425; payment of dividend No. 34, free of income tax, declared 29th June, 1918, £17,200; leaving a balance to be carried forward of £188,645 0s. 11d. The company continues to hold 118,000 Village Deep shares and £98,450 5 per cent. War Loan. The directors recommend that a dividend of 4s. 6d. per share, free of income tax, be declared payable to all shareholders registered on the books of the company on the 30th June, 1919, and to the holders of Coupon No. 34 attached to share warrants to bearer, and that such dividend be paid by the distribution of fully-paid £1 shares of the Village Deep, Ltd., to be taken, for the purpose of such distribution, at 18s. per share. On this basis for every four shares held in this company the holder will receive one share of the Village Deep, Ltd., fractions being payable in cash at 18s. per Village Deep share. The total tonnage milled during the year was 265,700 tons, being 57,250 tons less than in the previous year. The re-estimation of the ore reserves made at the 31st December last shows 378,510 tons available of an average value of 7 dwts. per ton. As will be observed from the consulting engineer's report, operations in the latter half of the year were impeded by various factors, namely, the recurrence of earth tremors, the influenza epidemic, and the shortage of native labour. In addition, there has been a rise in working costs during the year of 3s. 6d. per ton milled, due to higher wages, war allowances, and to increased cost of stores and material. The Central Mining and Investment Corporation, Ltd., have been appointed consulting engineers to the company.

CONSULTING ENGINEERS' REPORT.

The consulting engineers, in their report, write under date 19th February, 1919:—The results of the year's operations, as compared with previous records, are shown in the following tabulation:

	1916.	1917.	1918.
Development footage	473	763	Nil
Tons mined	390,138	360,752	279,264
Per cent. sorted	14.3	10.6	5.1
Tons milled	333,885	322,950	265,700
Yield	£480,979	£447,976	£388,504
Yield per ton milled	28/9.7	27/8.9	29/2.9
Expenditure	£319,341	£307,436	£299,214
Expenditure per ton milled	19/1.5	19/0.4	22/6.2
Total working profit	£161,638	£140,539	£89,431

The second half of the year saw a very considerable decrease in operations. In July and August severe earth tremors resulted in pressure bursts in the shaft and the lower workings where the higher grade ore of the mine is situated, and in consequence hoisting from these levels has been restricted and the value of the ore milled became much reduced; in addition, the influenza epidemic in September and October disorganised the work of the mine and so restricted the native labour supply that the position at the end of the year became exceedingly acute, the tonnage milled dropping to a figure which made it difficult to continue profitable operations. A comparison of the results of the two periods is given below:—

	Tons milled per month.	Recovery per ton.	Costs per ton.	Profit per ton.	Working profit.
Jan. to June...	23,730	30/1	22/-	8/1	£59,033
July to Dec. ...	20,550	28/-	23/1	1/11	£30,328

ORE RESERVES.

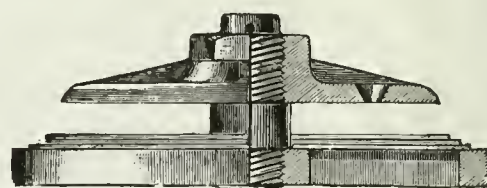
The ore reserves, including reclamation pillars, have been re-estimated as at December 31st, 1918, and amount to the following:—

	Tons.	Value, dwts.
Main Reef	141,180	5.4
Leader	105,530	10.0
South Reef	131,800	6.4
Total	378,510	7.0

Compared with the preceding year the reserves show a reduction of 249,640 tons, with a decrease in the value of 0.1 dwts per ton. A progressive reduction in blocked-out tonnage must now be expected, as the development of the mine has been completed with the exception of certain Main Reef areas still requiring further prospecting. It will become increasingly difficult to determine closely the amount and value of the ore still available in the mine for stoping and reclamation. Considerable difficulty has been experienced during the year in mining the higher grade ore still left in the lower levels of the mine, earth tremors having resulted in falls of rock; it was thought advisable to suspend operations for a time in this area, and in consequence the mill has had to depend latterly more on ore from the lower grade and Main Reef areas. The profitable mining of Main Reef depends upon a sufficient supply of native labour, but during the latter months of the year the labour force decreased so rapidly that it was impossible to keep up the tonnage, and the profits decreased in consequence. A material increase in the native labour force is necessary if profitable operations are to continue. There is now, fortunately, some improvement in the supply to the mines generally, and, although this mine has not yet benefited, it is reasonable to hope that its position in this respect will show change for the better before long.

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Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

A Plea for the Shareholder.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—I notice that there are a great many gold mining companies which are now moribund and seldom quoted on the Stock Exchange. I happen to be a shareholder in some of these companies. The directors have from time to time informed us, *i.e.*, the shareholders at a distance, that the companies have been closed down for want of sufficient capital to carry on operations; in other instances we are informed that the difficulty of coping with the water trouble is the cause of mining operations ceasing. We receive year in and year out the reports of the directors and the usual speeches made by the various chairmen; in the meantime the cash in hand is gradually dwindling away and being spent on directors' fees and other expenses, no doubt quite necessary, and I suppose when all the funds have been frittered away the shareholders will be called together to consider the advisability of liquidation. Now, sir, what I want to know is this, how can shareholders at a distance air their grievances? Is there any body in Johannesburg that would undertake to represent shareholders and bring about a liquidation of these moribund companies before all the cash has been spent? I notice in your last issue and on other occasions you have given the cash balances of various companies, clearly showing that if their assets were realised and added to the cash in bank that quite a decent amount could be paid out to shareholders. Now if the directors know that it is impossible to raise sufficient money to carry on these mines which are closed down for various reasons,

surely it would be wise to call a meeting of shareholders and put the proposition before them and thoroughly explain that by hanging on all the cash assets will gradually be eaten up in fees and expenses. Let it be pointed out that by liquidating the shareholders would be able to receive in cash so much per share. I notice quite a number of these almost forgotten and closed down mines would pay a decent sum of money to shareholders if all their assets were realised. Any number of them have sufficient cash in the bank to pay 5s. per share and yet the market quotations probably stand at 1s. to 3s. on the Stock Exchange. Can you make any suggestion to assist the shareholders at a distance?—Yours, etc.,

R. D. ROBERTSON.

East London.

[It is somewhat difficult to reply to these vague and sweeping allegations. If our correspondent will state what companies he has in mind, we will endeavour to help him. —Ed.]

ANSWERS TO CORRESPONDENTS.

All enquiries addressed to the Editor must bear the writer's name and full address. We cannot reply to enquiries by letter, but telegrams with replies prepaid will be answered. Correspondents are requested to write their names and pseudonyms distinctly.

"Rouxville."—Particulars are given in another part of this issue.

"D. W."—Deepwater Diamonds, we understand, is a proposition to dredge the Vaal River diggings.

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Informative Service Free to Readers of this Journal.

In response to requests from numerous readers of this journal resident in various parts of Africa, and also Overseas, it has been decided to extend and amplify the enquiry columns of this journal in regard to the affairs of companies and syndicates in which readers may be interested or propose to become interested.

In connection with this information service, which is offered free to all readers, the following regulations must be distinctly understood and observed:—

1. *The South African Mining and Engineering Journal*, whilst undertaking to obtain the latest and most accurate information available in regard to assets, liabilities, operations, finance, Directorate, offices and prospects, etc., disclaims any responsibility for pecuniary loss in speculation or investments resulting from such information.
2. We cannot undertake to advise clients to *buy or sell or hold*, or to give "Sharemarket tips." We supply the most reliable and up-to-date information available and readers must form their own judgment therefrom.
3. Under no circumstances can letters be replied to direct. Communications can only be answered in this column.
4. Enquirers may use a pen name or give their real names, as they wish, but the correct name and full address of the enquirer must accompany each communication, not necessarily for publication, but as a guarantee of good faith.
5. In future we shall publish the name of the company or syndicate about which enquiries are made.
6. All enquiries should be addressed to the Editor, *The South African Mining and Engineering Journal*, Box 963, Johannesburg, and marked "Enquiry" in the top left-hand corner of the envelope.

The following communications are answered in this issue:—

A.T.L. Salisbury, Southern Rhodesian, "Western Rand Estates."

We believe the facts concerning this property to be as stated in the "S.A. Mining and Engineering Journal" of July 5, 1919, which see. There has been no official contradiction of that statement, which is a complete and accurate account of the affairs of the company.

"OPTIONS," Braamfontein, Johannesburg. "Modder East."

The mine is understood to be opening up well. The debentures appear to us to be a better investment than the options. We understand that the recent developments in the Modderfontein East Mine have been satisfactory, and that the existence of payable ore over a considerable portion of the Company's area has been established.

FRANK SMITHS.—Dear Sir,—Referring to your mention in the last number of the "South African Mining Journal," I shall be obliged if you will inform me whether any South African House will provide funds for the restarting of the Frank Smith Diamond Mine, and whether the provision for funds implies reconstruction and increased capital. I shall also be glad to learn at approximately what date the mine will begin operations, and what is the current estimate of the value of the yield of the diamonds? What is the value of the 40,000 acres of ground held by the Company in freehold? Is this asset unencumbered?—H.A.

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"H.A." Frank Smith Diamonds.—Elsewhere in the present issue, and in last week's issue of this journal, appear notes on this property which should enlighten you. It is understood that the House of Barnato are providing adequate funds for the reopening of the mine. A reconstruction scheme is being proceeded with, and when this is completed the Company will have large cash resources, and the mine and freehold property will be unencumbered by any debt. The scheme will not, so it is understood, involve any substantial increase of the existing capital. A yield of about 4 carats of high-grade diamonds per 100 loads is expected, and on this return the mine should prove profitable.

PERSONAL.

The jubilee of Kimberley in 1920 will synchronise with the formation of the diamond cutting industry in the Union. In sixty years Kimberley has supplied the world, roughly, with £500,000,000 worth of diamonds.

* * * *

Mr. G. C. S. Pauling, of the Lodge, Effingham, and of Pauling & Co., Ltd., engineers and contractors, director of Capetown Consolidated Tramways & Land Co. and Lonely Reel Gold Mining Co., "so far as can at present be ascertained," left estate valued at £530,000.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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AN ENGINEERING REVIEW OF THE MINING CRISIS.—I.

Valedictory Address of the Retiring President of the South African Institution of Engineers, Mr. C. D. Leslie.

In presenting my inaugural address last year, I took occasion to indicate something of what could be accomplished by this Institution in educating and preparing the people to meet the urgent requirements of this country and to anticipate the difficulties with which it must be faced. Already South Africa's future is overshadowed by the impending downfall of its low-grade mines. Since war started great changes have taken place in the Witwatersrand gold mining industry. This is illustrated by the following figures:—

	Year ended 30th June, 1914.	1919, Based on figures for three months January to March		Difference.
No. of Producing Mines..	50	47	—	3
Tons milled	25,400,000	23,365,000	—	2,035,000
Working Costs	£21,556,000	£26,713,000	+	£5,157,000
Working Costs, per ton ..	17/-	22/10	+	5/10
Working Profit	£11,296,000	£6,478,000	—	£4,818,000
Working Profit per ton	8/11	5/6	—	3/5

The working costs and profits results per ton are influenced favourably in the latter period (1919) by the inclusion of new high-grade mines, on the Far East Rand, which were not producing gold in 1914. A more serious position is shown on the Near East Rand section of these fields, where 14 producing mines returned for the year ended 30th June, 1914, a working profit of £2,750,000, or 84d. per ton. For the first quarter of this year they gave a working profit at the rate of £195,000 per annum, or 7d.

per ton, a decline of 92 per cent., with working costs at the rate of £7,134,000 per annum, from which the State revenue would probably benefit to the extent of from £2,000,000 to £3,000,000 per annum. The underground water from these fourteen mines amounts annually to about 3,000,000,000 gallons, pumped at a cost of approximately £300,000, or 2s. per 1,000 gallons. When excessive operating costs close down mines in this Near East Rand section the water which makes in them would overflow into neighbouring mines and, if not arrested, would find its way into the mines of the Central Rand. The danger of the whole section defaulting is quite apparent since pumping costs are now 50 per cent. in excess of the total profits. It is obvious that it would never pay to re-open these mines in the future because of water difficulties, decay of plant and material, caving in of underground workings, and cost entailed in getting back to a state of average efficiency with a new complement of labour. These 11 mines, which are by no means the only ones in danger of closing down, give direct employment to 6,600 white men, but directly and indirectly they probably support as many as 50,000 white persons. Suspension of operations at this stage would cause incalculable loss to the neighbouring towns as well as to the country in general. I wish to refer to-night to some of the principal causes which threaten the premature abandonment of the low-grade mines of the Rand, and will take first the question of changes in terms and conditions of employment. In addition to shorter hours of labour and longer holiday leave, there has been a rise in average annual earnings, since war began amounting to about £75 per white man, who now receives an average annual wage of approximately £375 and £400 for surface and underground work respectively. As will be shown later, a marked decline in average output per employee has imposed upon the mining industry much greater penalties than the higher wages. Notwithstanding the obvious relationship of wages and efficiency, these two questions are scarcely considered together here or in other parts of the Empire. The reluctance of the employer to raise the question of efficiency implies either want of frankness which might beget distrust, or fear of the dissension which thorough and open examination of the subject might cause. It has to be admitted that, by protecting negligent and insubordinate employees and causing stoppage of work on their behalf or in case of dispute, underground men have caused the mining industry to suffer greatly and unfairly, but it is to be hoped that this is a passing phase. Such action is quite opposed to true trade unionist principles which are higher and sounder than the too-often accepted interpretation of them.

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They stand for a fair day's work and the upholding of proper and necessary discipline as well as for a fair day's pay. In order to deal equitably with these important questions employers and workmen must approach them in a more constructive spirit than prevails to-day and with much more knowledge and understanding of each other's requirements and of the direction towards which their joint action is leading. It is necessary to realize the unemployment and other evils which must follow upon a low rate of production, and I fear that the "We demand" attitude is far from being conducive to the satisfactory settlement of employment questions. A representative Board, composed of members highly experienced in the various classes of surface and underground work, would be of great benefit in adjusting wages and employment of men and apprentices so as to correct many anomalies which now cause unnecessary dissatisfaction and expense. A review of the present perilous position would be incomplete without reference to what is known as the "Colour Bar." This involves the proper means for securing due advancement for the native in a manner which would tend to improve the status and prospects of the white man, while avoiding competition of the lower with the higher civilisation and realising that the policy of getting increased employment by putting two men to do one man's work must end in defeating its own object. Although support of the white man would always be a strong natural tendency in the members of our mine supervision, it is nevertheless clear that, in mining, greater opportunity for the native means decrease in the ratio of whites to coloured men and natives. I venture the opinion that, if moderate changes were made carefully and gradually, with the help of all concerned, until the average output per white employee on our mines finally approached the pre-war standard, working costs would come down and there would be more and better white employment than could be provided for by continuing as at present. Employers and workmen should seek together the best solution of this vexed question of the colour bar, the greatest menace of which lies in the avoidance of it with consequent danger to the peaceful progress of this country. At this critical stage, when rapid expansion is essential, political, industrial and racial antagonism is arresting the progress of South Africa and harming every section of its inhabitants. Surely the time is getting ripe for the white people to sink their differences and to unite for their mutual welfare and protection. The extraordinary extent of the Rand gold deposits and the unparalleled magnitude and regularity of the annual gold output from them have, to some extent, obscured the disabilities imposed on the mines in ever increasing measure. Unless it is ascertained with some degree of accuracy how much the mining industry represents as a source of wealth and development to the whole of South Africa, it is to be feared that the State will muddle along on revenue extracted by overdrawing on this asset, regardless of the irreparable damage being done and its very seriously retarding effect on the future progress of the mineral industries and of the country in general. Our resources in coal, base metals, gold, asbestos and precious stones, are immense, and the mining industry requires fostering quite as much as agriculture, since these are the two main sources of supply of material for industrial development. The closing down of one or two mines, at this stage, might even be a blessing in disguise, if this would cause a real awakening to the importance of mining as a whole by drawing attention to the enormous loss to South Africa entailed in putting out of commission, from end to end of the Rand, a large proportion of the gold-bearing ore which, through avoidable causes, has become unremunerative. What I would now desire to emphasise is that, largely on account of world-wide changes, the mining industry has no longer its former capacity of bearing the burdens imposed on it. As it would be useless to take up your time with the question of imposts from which no relief can be expected, I will turn to the discussion of two most important disabilities, due directly to State

action, which, if remedied, would materially alter the present deplorable state of affairs here. The first of these is the undue burden of indirect taxation in such forms as Customs dues and Railway rates. Since indirect taxation constitutes the great bulk of the taxation on Rand gold mines, and is practically the same per ton crushed, irrespective of its value, it follows that an ounce of gold from low-grade ore is indirectly taxed twice as much as an ounce of gold from doubly rich ore. It likewise follows that such indirect taxation, whilst twice as much in proportion to the gross income (*i.e.*, gold recovered) of low-grade mines is far more than twice as much in proportion to the nett income (*i.e.*, profits, if any) of such low-grade mines. It behoves us to realise from every point of view the disastrous consequences of continuing to maintain high rates of indirect taxation, since these result in confining mining in this country to the comparatively small percentage available of selected mineral products of high value and, in the end, have the effect of curtailing mining and the State revenue therefrom. The need is for national economy of time and money. It is not alone the Government which imposes taxation. The Transvaal Provincial Council and the Johannesburg and other Municipalities along the Reef lavish money on a grand scale, and much of it comes from indirect taxation on mining. I would therefore advocate the appointment of independent financial experts to assess the benefits which South Africa derives from mining, and to prepare statements revealing the amount of indirect taxation drawn through each main channel. The report should show how the figures may be arrived at annually for the purpose of securing intelligent, instead of haphazard, taxation, which will not have the effect of discouraging proper advance in production.

(To be continued.)

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THE WEEK IN THE SHAREMARKET.

A Dull Week—Better Close—Rise in Modder East—Fluctuations in Crown Diamonds.

The opening business on Friday showed a weakening in Crown Diamonds which, from 25s. buyers on the previous day, came back to 23s. 9d. sales. At the call business was limited, only nine stocks recording sales. The changes, except in Modders, were for the worse. Crown Diamonds lost another 3d. and during the course of the morning a second 3d. was shorn off. Modder Easts were also lower. The only early business on Saturday was a sale of Crown Diamonds at 23s. 3d. Coal stocks were firmer at the call with Coronation Collieries at 58s. 9d. buyers and Clydesdales at 25s., without selling responses. A deal in East Rand Debentures went through at £67 10s., after which an advanced bid of £68 failed to secure any more. Prices were unchanged at the call on Monday, beyond an advance in Pretoria Cements. Modder Bs. and Modder Deeps were passed without a quotation. During the morning a demand for Modder Easts advanced them to 20s. 6d. buyers and Cements to 72s. 6d. At the opening on Tuesday prospects looked a little brighter with sales of Government Areas at 90s.; Modder Easts at 20s. 9d. and the four-year options at 5s. 2d. The call, however, was dull, the best demand being for Springs West. In the course of the morning Modder Easts came back to 20s. 6d. sellers, but the options were firm. On Wednesday Pretoria Cements made another advance at the call with sales at 74s. and further supplies at the price were unobtainable. Modder Easts and the options were also in good demand and continued being fancied all through the day, the parent stock touching 21s. Modder Deeps passed Modder Bs. by 1s. in the bidding. At the close Pretoria Cements advanced to 75s. and Modder Easts to 21s. 3d.; the options remained at their best. The opening business on Thursday was practically confined to Modder Easts with sales up to 21s. 7½d. The call showed a little more life than of late and an improving tendency, with the exception of Crown Diamonds which have been gradually dropping down from their recent rise to 26s. 3d. until the low level of 21s. 9d. has been reached. The outside dealings for the week have been limited to diamond stocks. Sales: Compound Diamonds, ranging from 13s. 3d. to 16s.; Koodoos, 20s.; Vendors, 17s.; Phoenix, 1s. 1d.; Monteleos, 13s. 6d. to 14s. 6d.; Makganyenes, 35s.; South-Westerns, 17s. 6d. and 18s. Buyers and sellers: Theron Diamonds, 15s.—17s. 6d.; Henderson's Options, 10d.—1s.; Sakalavas, 6s. 6d. buyers.

	Fri., 11th.	Sat., 12th.	Mon., 14th.	Tues., 15th.	Wed., 16th.	Thurs., 17th.
African Farms . . .	13 6*	13 6*	13 6*	13 6*	13 6*	13 6*
Anglo-Amer. Corp. . .	26 0†	—	—	27 0†	27 0†	21 0*
Apex Mines . . .	7 0*	—	—	—	—	6 9*
Aurora Wests . . .	6 0	5 6*	—	—	—	—
Bantjes Cons. . . .	2 4*	2 4*	2 4*	2 4*	2 4*	2 4
Brakpan Mines . . .	57 6*	57 6*	57 6*	58 0	58 0†	58 0*
Brick and Potteries .	4 0*	4 0*	—	5 0	5 0†	—
British South Africa	21 0*	—	21 0*	21 3*	21 3*	21 0*
Bushveld Tins . . .	1 7*	1 8	1 8	1 8	1 6*	1 6
Cassell Coals	22 6*	25 0*	25 0*	25 0*	25 0*	—
Cinderella Cons. . .	4 9*	—	—	—	4 9*	—
City and Subs. . . .	6 0*	6 0*	6 0*	6 0*	6 0*	6 3*
City Deeps	51 0†	51 0†	50 6†	—	48 6*	49 0*
Con. Langlaagtes . .	18 0†	17 3*	17 3*	17 3*	18 0*	17 6*
Con. Main Reefs . . .	8 3	8 9	8 3*	8 3a	8 6*	8 9*
Con. Mines Selection	21 9†	21 9†	21 6†	20 6*	21 6†	21 0†
Coronation Colls. . .	57 6*	58 9*	58 9*	58 9*	58 9*	61 0*
Coronation Freeholds	1 10*	1 11	2 0†	1 2*	1 10*	—
Crown Diamonds . . .	23 6	23 3	23 3	23 0	22 6	21 9
Daggafontein Mines	—	21 0*	22 0†	22 0†	—	21 0*
East Rand Coals . . .	2 6*	2 7†	2 1*	2 3*	2 3*	2 6†
East Rand Deeps . . .	0 10*	0 10*	0 10*	0 10*	0 10*	0 10*
East Rand Minings . .	17 0*	16 6*	17 0*	18 0*	18 6*	—
East Rand Props. . . .	5 3*	5 6	5 3*	5 3*	5 3*	5 4*
East Rand Debs. . . .	£65*	£67½*	£68*	—	—	£68*
Eastern Golds	1 1*	1 3	1 2*	1 2*	1 2*	1 2*
Frans Smith Dmds. . .	4 7*	4 7*	4 8	4 7	4 10	5 0
Geduld Props.	45 6	45 0*	45 0*	45 4†	45 3	46 0
Ginsbergs	—	1 6*	—	1 7*	1 7*	1 7*
Glencairns	1 0	—	—	1 0	1 0	1 0*
Glynn's Lydenburgs .	—	—	16 6*	17 0*	17 6*	—

*Buyers. †Sellers. AEx London. BOdd lots.

	Fri., 11th.	Sat., 12th.	Mon., 14th.	Tues., 15th.	Wed., 16th.	Thurs., 17th.
Govt Areas	88 9	88 3*	88 6*	90 0*	89 9*	90 0*
Jhb. Bd. of Ex. . . .	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	2 6*	—	2 9*	2 9*	2 9*	2 10*
Klerksdorp Props. . .	1 2*	1 2*	1 3	1 3*	1 3*	1 3*
Knight Centrals . . .	6 2*	6 2	6 1*	6 2	6 2*	6 6*
Lace Props.	16 0*	16 0*	16 3*	17 0†	—	16 6
Leeuwpoot Tins. . . .	23 0*	23 3*	23 6*	23 0*	22 9	22 9
Luipaardsvlei Est. . .	—	—	2 9	—	3 1*	3 0*
Lydenburg Farms . . .	—	8 3*	8 0*	8 2*	8 3*	8 6*
Meyer and Charltons	—	—	—	—	—	80 0*
Middelvlei Est. . . .	1 6*	—	1 9*	—	1 6*	1 8
Modder B's	40 291 0	491 9	491 —	40 991 0	491 —	—
Modder Deeps	—	—	—	—	155 0*	155 6*
Modder Easts	20 0	20 0*	20 3	20 7*	20 6	21 7½
Do. Opts. (3 yrs.) . .	3 0*	2 10*	3 2	3 3*	3 5	3 6*
Do. Opts. (4 yrs.) . .	4 9*	4 9	4 9*	5 1*	5 4	5 6
Hume Pipes	—	25 0	26 0*	27 0*	27 0*	26 0*
Natal Navig. Colls. . .	—	—	—	22 0*	—	22 0*
National Banks	300 0†	300 0†	298 9*	298 9	289 9†	300 0†
New Boksburgs	1 3*	1 0*	—	—	—	—
New Eland Dmds. . . .	25 0*	25 0*	—	25 0*	—	25 0*
New Era Cons.	10 3*	10 3*	10 6	10 3*	10 3*	10 3*
New Geduld Deeps . . .	—	4 7*	4 7*	4 7*	4 6*	4 7
New Heriots	10 0†	9 0†	9 0†	—	—	9 0†
New Kleinfonteins . . .	9 0†	8 9†	9 0†	9 0†	8 9†	8 6*
New Primrose	—	—	—	—	1 6*	—
New Unifeds	3 0*	3 0*	3 0*	—	4 6†	—
Nigels	5 0*	5 6*	5 6*	—	5 9†	—
Nourse Mines	—	8 6*	8 6*	8 9*	8 9*	8 9*
Premier Deferreds . . .	155 0*	—	—	—	—	—
Premier Preferreds . .	150 0†	150 0†	150 0†	150 0†	150 0†	150 0†
Pretoria Cements . . .	70 6*	70 0*	71 6*	72 0*	74 0	75 0
Rand Collieries	3 3*	3 3*	3 3*	3 3*	3 4†	—
Rand Nucleus	1 5*	1 5*	1 5*	—	1 5*	1 6*
Rand Select. Corp. . . .	69 6*	—	70 0*	—	—	72 0*
Randfontein Deeps . . .	4 0*	4 0*	—	4 0*	—	—
Randfontein Est. . . .	14 6*	14 6*	14 6*	14 6*	14 6*	14 6*
Roberts Victors	—	13 9	13 9	13 6	12 6*	11 6*
Simmer Deeps	—	1 3†	—	—	—	—
S.A. Breweries	30 0*	—	—	—	—	—
S.A. Lands	5 7*	5 7	5 6	5 6*	5 9	5 9
Springs Mines	46 6*	46 6	46 6*	46 6*	46 9*	47 0*
Sub-Nigels	21 9	21 6	21 3*	21 6*	21 6*	21 6*
Swaziland Tins	13 6*	13 6*	13 6*	15 0*	15 0*	18 6†
Transvaal Lands	—	—	—	27 6*	—	—
Trans. G.M. Est.	—	—	—	—	—	12 6*
Van Ryn Deeps	66 9*	66 6†	66 9	67 0	67 6*	68 3
Village Deeps	10 3*	—	12 0†	12 0	10 0*	11 0*
Welgedachts	27 6†	—	27 6†	—	—	—
West Rand Cons.	3 6*	—	3 6*	3 6*	3 9*	—
Western Rand Est. . . .	4 0*	4 2*	4 0†	4 3*	4 1*	—
Witbank Collieries . . .	—	—	—	—	52 6*	52 6*
Wit. Deeps	13 9*	14 0*	14 0*	14 0*	14 3*	14 6a
Wit. Townships	—	—	30 0†	—	—	—
Wolhuters	2 1*	2 1*	2 1*	2 1*	2 3*	2 5
Zaaiplaats Tins	6 10	6 8	6 8*	6 10	6 8*	6 0*
Union 5 per cent. . . .	£103½	£103½	£103½	£103½	—	£103½
New State Mines	25 6*	25 0	25 6*	25 6*	25 6*	25 0
South Van Ryns	8 0*	8 0*	8 0*	8 0*	8 0*	8 0
S.A. Alkali	20 0†	19 6†	19 3†	16 0*	18 0a	17 6*
Tudors	1 4*	1 4	1 6†	1 0*	1 0*	1 3†
Tweefontein Colls. . . .	22 6*	22 6*	22 6*	22 6*	22 6	23 6*
West Springs	21 6*	21 6*	21 0*	21 6	21 0a	22 0
Do. Options	—	5 0	4 9*	4 9*	4 9*	5 0†
Sacke Estates	—	—	—	1 0*	—	—
New Modderfonteins . .	11th. £25 11s. 3d.*	12th £25 10s.*	14th £26†	15th £25 13s.*	16th £25 16s. 3d.	17th £25 16s.*

*Buyers. †Sellers. AOdd lots. BEx London.

Leeuwpoot Tin.

The report of operations at Leeuwpoot for the quarter ended 30th June, 1919, is as follows:—Stamps, 17 (including 2 Nissen); time run, 8037 days; tons crushed, 12,017 short tons; concentrates won, 223 long tons; average assay value of concentrates is 62.13 per cent. metallic tin; average price of metallic tin on which the quarter's revenue has been determined is £223 7s. per ton; estimated profit, £3,025 7s. 2d. Capital expenditure: The sum of £6,896 13s. 7d. has been expended for machinery, buildings, shaft sinking, etc. During the quarter a sum of £2,403 8s. for development redemption has been included in working costs.

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RHODESIAN & BELGIAN CONGO SECTION.

The Shamva—Rhodesia's Largest Gold Mine—An Interesting Description.

THE Shamva Mine in May produced £10,649 from the mill and £23,796 from sands and slimes, and thus ran the Globe and Phoenix very close for the top position in the output. Acquired by the Gold Fields Company in 1909, the Shamva Mine began crushing in 1914, and though a great amount has been spent upon its very thorough installation of machinery and plant, the whole of the capital has already more than been returned in dividends, writes a correspondent in the last issue of the *Bulawayo Chronicle*. The rock, after being broken down, is conveyed in trucks along the underground tramways on the four levels by means of a haulage system, which includes three petrol-driven locomotives hauling trains of rock to bins on the face of the hill. From there an electric haulage transfers the ore to a series of crushers where it is reduced to a size suitable for the battery. From the crushers the ore travels by belt conveyors to the battery, consisting of 56 Nissen stamps, each weighing one ton. Pulp from the battery flows by gravity to tube mills, of which eleven are installed, and from thence gravitates to a series of cones in which sand and slime are separated, the former being treated by leaching with cyanide solution and the latter by agitation in Puchucha tanks, followed by extraction of the gold-bearing cyanide solution from the slime pulp by a Butters vacuum filter plant. The clarified solutions from both the sand and slime plants are passed through zinc boxes in the extractor house for the recovery of their gold content. Power is obtained from six huge boilers, each of which can evaporate 15,000 pounds of steam per hour. The coal supply is delivered direct into a bin from railway trucks, and from there it is mechanically conveyed through a coal crusher to hoppers over the boilers from whence it gravitates to mechanical stokers feeding the furnaces. Electrical power is derived from three 1,250 kilowatt dynamos, each driven by a steam turbine of which it is necessary to keep only two in operation at a time. There is also a powerful steam turbine-driven air compressor for supplying air to rock drills. The compressor itself is also on the turbine principle. The whole of the mine plant is electrically driven and the total power costs, with coal costing 30s. per ton average under $\frac{1}{2}$ d. per kilowatt. In addition to the wonderfully well balanced power plant of the mine, and the complete electric lighting system, there is an interesting water supply scheme, providing about 11,000,000 gallons per month, which is brought a distance of eight miles, with a lift of fully 600 feet.

A journey on the haulage trollies and then a short climb up the steep side of the hill brings an attractive view of houses and huts dotted among the trees, of cultivated lands in the distance, and the repair shops, offices and other mine buildings in the nearer neighbourhood. Then, unexpectedly, comes the lip of the crater, and it needs strong nerves to look down into a hole 500 feet deep and half as wide, from which three million tons of rock have been taken. The volcanic impression is strengthened by the interior of the hole running down almost perpendicularly. Upon its sides scores of natives are at work with crowbars, tumbling down lumps of rock that have been loosened by dynamite. The boys, with lifelines casually hitched about their waists, look strangely small on the opposite face, others gaze up at us curiously from nearer at hand, and then go cheerfully on with their adventurous work, which they clearly enjoy, climbing about on the precipices like flies, and making the great hollow echo as the rocks go crashing to the bottom, to be taken to the mill by way of adits which run for long distances into the heart of the hill. One secret of success in treating this low-grade ore is that gravitation does a big share of the transport work. Another help is the partial oxidation of the rock, in some places as far as 200 ft. below the surface. Rarely is there any visible gold, and then only on a cleavage plane. The ore body is a quartzite, with sandstone in the oxidised zone. Its contained pebbles are of

chert, and the gold, running about 3.8 dwts. to the ton, is in the matrix, often mingled with pyrites. The recovery value is $3\frac{1}{2}$ dwts. Some 54,000 to 56,000 tons are being handled monthly, at a profit of about £12,000. These gigantic operations have led to the opening up of a second great gold quarry resulting in a further prodigious gash across the top of the hill a little to the back of the summit. Actually, there are four quarries or stopes on what is known as the east extension and three on the south parallel, while, as mentioned, the neighbouring smaller hill is about to be excavated. So far as the richer and more obviously payable ore is concerned, the deposit runs in three parallel lines across country for a distance of nearly two miles, and the formation undoubtedly exists far beyond the visible outcrops.

* * * *

The gold output of Southern Rhodesia for the month of May has been declared at £218,057, being an increase over the previous month of £4,897, whilst there has been an increase in the base metal production of no less than £198,590, including adjustments on the realisation of asbestos from June 1st, 1915, to 30th April, 1919. The total value of the base metal production for the month was £275,120. The summary of production is as follows:

Gold (ozs.)	51,722.22	£218,057
Silver (ozs.)	17,587.27	2,131
Coal raised (tons)	45,759.00	(sales) 12,237
Coal used for Coke and Bricks (estimated value)		5,186
Copper, Blister (tons)	296.88	14,841
Chrome Iron (tons)	4,890.05	21,117
Asbestos, Fibre (tons)	831.56	*220,783
Arsenic (tons)	13.40	592
Wolframite (tons)	.41	44
Scheelite	(Adjustment)	130
Diamonds (carats)	30.25	187
		£495,311

* Including adjustments on realisation from 1/6/15 to 30/4/19.

The asbestos output was made up as under:

Bulawayo District.	Tons.	Value.
Birthday A and B (Willoughby's Consolidated Co., Ltd.)	5.39	£86 4 10
Nil Desperandum (S.A. Asbestos Co., Ltd.)	179.39	3,587 18 0
Shabanie (Rhodesia and General Asbestos Corporation, Ltd.)	260.92	6,523 4 0
Shabanie Adjustment from 1/11/16 to 30/4/19	—	99,317 10 5
Victoria District.		
Balmain (S.A. Asbestos Co., Ltd.)	13.00	288 0 0
Gath's (Rhodesia and General Asbestos Corporation, Ltd.)	167.86	4,196 10 0
Gath's—Adjustment from 1/6/15 to 31/3/18	—	73,865 3 0
Gath's—Adjustment from 1/4/18 to 31/12/18	—	24,906 0 1
Gath's—Adjustment from 1/1/19 to 30/4/19	—	4,139 16 0
King Asbestos (Rhod.), Ltd.	200.00	3,572 10 0
	831.56	£220,782 16 1

In regard to gold output the Shamva and the Globe and Phoenix were the leading producers. Production of gold, according to districts, was: Bulawayo, £53,818; Gwelo, £69,710; Hartley, £23,002; Lomagundi, £7,561; Mazoe, £3,066; Salisbury, £40,225; Umtali, £17,515; Victoria, £3,129.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Increased Price of Gold Rumours.—South African Matters.—Canadian and American Markets.—Oils and Colours.—Timber and Building Material.—Electrical Goods.—The Western Rand.

The July month so far has been exceptionally quiet, as there has been a timid feeling in existence about the actual signing of the Peace Treaty. Another important matter is that balance sheets to the end of June had to be completed and are now being dealt with. The Commission on the lower-grade mines re-opened their public sittings on Wednesday, but it is too early to forecast results. There was a rumour in town that the British Government were likely to pay an increase for our gold output, but nothing is definitely known about it. It can be ventured that various causes, such as the gold controversy in England and our poorer-grade mining Commission, as well as the signing of the Peace, have certainly given a broadening outlook in commercial circles. It has also given an idea that we may look forward to a time of what may be termed extraordinary happenings in the price of various commodities. For example, it is almost impossible to ascertain the solid price of linseed oil, because it is said that a 20 per cent. rise per ton took place in London almost in one day, in consequence of a big shipment being sent to Germany for a large shipment of potash from there in return. In connection with Central European trading affairs a paragraph appeared in the London *Times* stating that a Vienna firm had sent a circular to a British firm as to surgical implements, stating they were anxious to re-open business after the war and that immediate delivery was guaranteed. Naturally people are very much concerned in reference to the accumulations in Central Europe, manufactured during the war. It may not be that there is much hardware, but it is authoritatively stated that a tremendous lot of household enamelware is ready to come out immediately the blockade is raised. No doubt such things as toys, electrical goods, small implements, chemicals, dyes and such like, will also be freely exported and so bring prices down considerably in the world's markets. Naturally all kinds of foodstuffs, fats, oils, clothing, boots, and similar things will advance in price. Already a statement has been made by a Berlin newspaper that the Government will organise all their immediate exports so that overlapping or manufacturing competition do not occur. These few hints must give food for much reflection and may be expanded in connection with each one's own trade in regard to competition, etc.

SOUTH AFRICAN MATTERS.

A member of the Commercial Exchange states that what is worrying merchants at the moment is that notwithstanding that there is so much gold-bearing ground to be opened out and exploited, to take the place of those mines that must close some day through exhaustion, capitalists will not be found to launch into the unknown until the Government gives some kind of assurance that the heavy burden of taxation will be restricted and become something like a known quantity. It is not sufficient to open up a few mines in the Far Eastern Rand, but to open the ground already pegged off throughout the Witwatersrand. Perhaps the present Commission will be the means of diffusing the knowledge requisite in dealing with this very important subject, not only to the merchants who have hitherto lived upon supplying the mines, but also to the employees, and, last but not least, shopkeepers, professional

men and others, who also live by the mining industry either directly or indirectly. Another serious matter at the moment is the difficulty of getting coal for the mines, which is interfering with the smooth running of the coal industry. This may, however, be only a passing phase, as both engines and trucks will soon be supplemented from overseas. By the way, this is no fault of the Railway, but one of those things for which the big war was responsible. As regards our manufactories, there is a big field at our very doors, in supplying the natives with their requirements in South-Western and Eastern Africa. Undoubtedly the competition will be keen in the old grooves where European countries undercut much of our manufacturing efforts in pre-war days. It is clear that the natives in Central Africa will now become accustomed to extra requirements through the gradual influence of civilisation, much assisted by the aeroplane and airship routes throughout the Dark Continent. The Government and the Chambers of Commerce in unison should do valuable work in this direction.

CANADIAN AND AMERICAN MARKETS.

Cable advices were received from Canada on Wednesday stating that some of the principal manufacturers had withdrawn the latest lists of quotations for wire nails, piping, barbed wire, fencing wire, and other things, more particularly where wire was used; also steel plates were mentioned. Presumably this was on account of the losses sustained in the recent shipments of wire nails since the Armistice. Prices at times were exceedingly low and out of all proportion to the cost of manufacture. Some merchants blame the Government for sending quantities of nails and all kinds of fencing material used in German East Africa to Durban, where at times wire nails have been sold as low as 1½d. per lb.; hence speculators who buy at these extraordinarily low prices can smash the market for new importations. Such withdrawals may also be explained by business being diverted from the Cape to Britain, France

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and other European centres, where no doubt the demand for wire nails must be very great indeed. The latest American cables indicate a further advance in iron, steel and hardware goods, which may also be explained by the increased demand from Europe.

OILS AND COLOURS.

Indian linseed oil is quoted at 10s. 6d. per gallon, which is 1s. 1d. below the English variety from merchant to merchant. The price for the best English is 14s. 6d. and 15s. per gallon from merchant to contractor. On Wednesday everyone seemed inclined to buy linseed oil because of the high and unsettled state of the market in London. Experts who may have been a little excited on that day often remarked that the best linseed oil will soon be in the neighbourhood of 17s. 6d. per gallon, chiefly in consequence of the demand from the European Central Powers when the blockade is absolutely removed. White lead is 65s. per 100 lbs., and there are plenty of stocks in the Union. Turpentine is 73s. to 75s. per case of 2-4's, and 80s. 10-1's. According to the latest cable prices from New York it cannot be landed at the Cape under 71s. 9d. per case. American best salad oil is 130s. to 135s.; South American, 110s. to 120s.; South African nut is 70s., and probably will advance to 75s. by the end of the month owing to the advancing tendency of monkey nuts in Delagoa Bay. Olive oil is 30s. to 35s. per gallon, and our market is very bare and European prices are very high in anticipation of the raising of the blockade. Local grease is £32 a ton, and imported £45 a ton; castor oil, 100s. (medicinal), ordinary 75s. to 80s., and the lowest quality 45s. per case; engine and cylinder oils are from 40s. to 45s. per case. Business is quite good, as the weather has been so bright and mild that it is encouraging property owners to have their places repainted after a lapse of nearly five years. Letters from England by the last mail request their South African clients to forbear and have patience with the fulfilment of orders, as the demand at Home is so great for paints and brushes of all kinds. This also applies to plate glass, which, fortunately, is very plentiful here, and the price is 6s. 6d. upwards. Johannesburg-made mirrors are 7s. 6d. per foot, but are not much in demand owing to the advance in furniture makers' wages and the ever-increasing cost of locally-made furniture. Notwithstanding this there is a further demand from the workmen, which is checking our local output, much to the advantage of the coast factories.

TIMBER AND BUILDING MATERIAL.

There is a further slight rise in Baltic timber, where all cables point to the likelihood of a great shortage in timber immediately the European countries get into anything like working order again. Deals in Johannesburg are 1s. 7d. to 1s. 8d.; flooring, 8½d. to 9d.; and ceilings, 6d. to 6½d. Galvanised roofing iron, up to 10 ft. lengths, is 1s. 4d., and above 1s. 5d. to 1s. 6d. per ft. Business is quite fair for timber in Johannesburg and throughout the Reef; in the country it is also fair, but not quite so brisk as it was. In second-hand goods merchants report having had good business but stocks are still scarce. All the yards are short of iron and the nominal price is 1s. 2d., but that is only where a few lengths can be picked up. Second-hand deals

are 1s. 3d. to 1s. 4d. per ft. for a decent article, and although lines can occasionally be had for about 1s. they are only fit for outdoor work. There is still a good demand for bricks, but bricklayers are scarce. It was noticed on a building near the centre of the town that only one artisan was employed, whereas the contractor was willing to put three more bricklayers on when they came along. Bricks are as last quoted, which includes an advance of 5s. per 1,000.

ELECTRICAL GOODS.

The scarcity of electrical goods still continues, no stocks having arrived from the coast since our last report, although they are expected here any day now. In the meantime, of course, a lot of business is being hung up for the lack of the requisite materials. Otherwise dealers report plenty of orders on hand and expect a busy time very shortly. Country business remains satisfactory under the prevalent shortage of material.

Latest.—A commercial traveller calling upon the more important merchants in town, in a conversation with the writer, characterised the past week as one of the worst he had experienced, as far as the transaction of business was concerned, for a long time past. The approaching Peace celebrations, with the dislocation of business they necessarily connote, appear already to have caused a somewhat depressing influence in commercial circles, and the general tendency has been to go dead slow until after the rejoicings and business again becomes normal. Now that the blockade has been raised fears are generally entertained as to importations in the near future, and caution is being rigidly exercised until some sort of pointer is shown as to how things are going to shape within the next few months.

THE WESTERN RAND.

According to a Reef traveller, a rich strike has been made on the Grey's Mynpacht, which has been looked upon as a derelict proposition. In that part of Luipaardsvlei district there are many breaks in the various reefs, hence continuity is often a very puzzling question, therefore such happenings as the one mentioned. The new strike is about 700 feet to the south of the old outcrop and the assays are said to be very good.

GLYNN'S LYDENBURG, LIMITED.

(Incorporated in the Transvaal.)

DECLARATION OF DIVIDEND No. 36.

A Dividend of 2½ per cent. (6d. per share) has been declared by the Board for the period ending 31st July, 1919, payable to Shareholders registered in the Books of the Company at the close of business on 31st July, 1919.

The Transfer Books will be closed from the 1st to 7th August, 1919, both days inclusive.

If possible the dividend will be paid early in September, 1919, but owing to the irregularity in the mail service it is impossible to state the actual date of payment. The Warrants, however, will be despatched to shareholders as soon as possible after receipt of the final Transfer Returns from the London Office. Those despatched from the London Office to persons resident in the United Kingdom will be subject to a deduction of English Income Tax.

By Order of the Board,

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per C. L. READ.

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Johannesburg, 16th July, 1919.

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THE S.A. Mining AND Engineering Journal

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NOTICE.—The postage of this issue of the *S.A. Mining and Engineering Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

Crown Diamonds.

The test wash at the Crown Diamond mine has begun, but the directors have decided to issue no statement regarding results until the washing is completed. Mr. Parsley is personally superintending operations and is proceeding very carefully with a view to determining thoroughly the value of the property.

* * * *

Modder East.

Development work at the Modder East property continues to disclose very encouraging results and it now looks as if there was no room for doubt as to the Corner House possessing in this, the newest of its Far East Rand ventures, a mine of rather more than average payability. We understand that the payable ore reserves aggregate more than 850,000 tons with an average assay value of above 8 dwts. per ton. A second debenture issue of £300,000, bearing interest at 6½ per cent., has been sanctioned. Holders of the first debentures are entitled to subscribe for the second issue *pro rata* to their holdings, and in the case of each issue debentures can be converted into shares at par for a period of two years from date. Modder East debentures appear to be an exceedingly attractive and sound speculative investment.

* * * *

Coal and Low-Grade Cold Mines.

At a meeting of the Low-Grade Mines Commission this week Mr. John Roy, on behalf of the Transvaal Coal Owners' Association, submitted a statement showing that the members of the association supplied 595,213 tons of coal to low-grade mines during the year ended June 30, 1919. The rebate allowed to mines showing an average profit of a shilling or less per ton milled was £8,969, and the amount of railage paid was £167,001. In reply to the Chairman (Sir Robert Kotzé), the witness said that the railway tariff for the transport of coal over short distances was extremely high. Replying to Mr. Gemmill, Mr. Roy said that the present price of coal left no margin for reduction. In giving a rebate to the low-grade mines, they had really subsidised the mines. This policy was not justifiable from a business point of view, but it had been adopted because of the loss that the mines would incur if they closed. The gold mines took about one-third of the Transvaal coal output. Questioned by Sir Evelyn Wallers, the witness said that in addition to being a loss to the community, the closing of the low-grade mines would seriously threaten some of the collieries. Replying to Mr. Roberts, Mr. Roy said that the coal industry was much hampered through the shortage of railway trucks.

* * * *

Lesser Concentrators on the West Rand.

We learn that two concentrators of the Lesser type, described in a recent issue of this paper, have been installed at the old French Rand property, where they will be employed on the treatment of residues and ore from the old mine and dumps.

* * * *

The Possibilities of Deep Water Diamonds.

The Deep Water Diamonds, Ltd., with a nominal capital of £30,000 and a working capital of £7,500 and £7,500 in reserve, is about to start operations on the Vaal River. The estimated cost of getting the elaborate plant, which is now under construction in Johannesburg, on to the river is £5,500. Mr. F. M. Cox is the originator of the idea, which is an air-lock caisson or diving bell. The directors of the company are Dr. Kaufman, Messrs. W. A. Doherty, M. Haskell, Saltman and Richardson. The bell of the caisson has a diameter of 15 feet, giving ample working space for several natives to work. The bell is specially designed for working in the deep pools, and can easily be shifted from pool to pool. The whole structure is attached to pontoons, which enable it to float in from a foot to eighteen inches of water. The theory of the working of the plant is very simple. The bell is lowered into the water by means of

water ballast, and the water is displaced by air pumped into the bell by compressed air pumps. The interior is lighted up by electricity, and has a telephone and signals installed and arranged for communication. The gravel is hauled up by a compressed air hoist, and is handled by purely mechanical means once it enters the skip. The apparatus is designed to work in any depth of water up to sixty-five feet, whilst the deepest pool in the Vaal in the dry season is only about thirty or forty feet. On the deck there are boilers and steam turbine for running the machinery, and an air compressor for supplying the bell. There is a bin to accommodate the gravel brought up, a trommel for cleaning and classifying the soil, gravitators for separating the diamonds, and a sorting table. Previous attempts at obtaining diamonds from the river bed have been made by means of breakwaters and suction or bucket dredgers. The latter method has proved unsuccessful because the bed of the river is a natural concrete of boulders and clay. The pressure of the air in the bell will be no handicap to the workers at the maximum known depth of the Vaal. We hope to print a more elaborate description of the plant in an early issue.

* * * *

Far East Rand Reel Specimens.

Mr. W. Bleloch has issued invitations for Friday the 25th, Saturday 26th (to-day), and Monday 28th, to the chiefs and staffs of the Government Mining Departments and to the consulting engineers and staffs of the mining houses and mines to view a collection of specimens of the reefs of the Far East Rand, prior to the dispatch of the collection to London next week. Mr. Bleloch would like it to be known that he extends the invitation to students, miners and others who may be interested, and he will attend at his offices, Transvaal Bank Buildings, on the days mentioned, including Saturday afternoon, to receive visitors.

* * * *

New Stock Exchange Rules.

From and after Friday, the 1st August next, the following new scale of brokerage will come into operation on the Johannesburg Stock Exchange:—All transactions entered into on the Stock Exchange shall be for nett prices as between buyer and seller. Brokers shall charge all persons, corporations or firms, resident in South Africa or elsewhere for whom they deal, whether buying or selling, a brokerage as follows: For transactions in shares of 3s. 9d. or under, $\frac{1}{2}$ d. per share; for transactions in shares over 3s. 9d. to 7s. 6d., 1d. per share; for transactions in shares over 7s. 6d. to 12s. 6d., $1\frac{1}{2}$ d. per share; for transactions in shares over 12s. 6d. to 20s., 2d. per share; for transactions in shares over 20s. to 40s., 3d. per share; for transactions in shares over 40s. to 75s., $4\frac{1}{2}$ d. per share; over 75s., at the rate of one-half per cent.—subject to a minimum charge of 5s. For transactions in Government Stock, at the rate of 5s., quarter per cent., subject to a minimum charge of 5s., except when dealing with the Government direct, when brokers may charge one-eighth per cent. This rule shall not apply to transactions between brokers who are members of the Johannesburg Stock Exchange. In "Option" transactions, brokerage shall be payable on the total amount, including the option money in the case of "Calls" and exclusive of the option money in the case of "Puts." Stamp duty upon a broker's note must in every case be charged to principals.

Prospecting by Returned Soldiers.

Members of the Canadian Mining Institute are being urged by H. Mortimer-Lamb, secretary-treasurer of that organisation, to support representations which have been made to Sir James Loughheed, Minister of Soldiers' Civil Re-establishment, asking for the establishment of a prospecting expedition headed by returned men, to explore and investigate the mining possibilities of those parts of the Dominion of which little is known. The suggestion is that the Government should utilise returned soldiers in the work of searching for mineral under the auspices and direction of the Department of Mines. It is recommended that suitable territory should be selected in different parts of Canada, and that each section so chosen and defined be placed in charge of an officer of the Department, whose duty would be to act as general supervisor of the work of the exploration parties. Each of the parties would be under a mining engineer who is a returned soldier, and the personnel of each expedition would be made up of returned men who are qualified for the work of prospectors. Mr. Lamb further explains the idea as follows:—"After making a discovery an officer of the Department of Mines would investigate it, and upon his recommendation it could be opened up. If the showing is found to be promising, the Government would invite the larger exploration companies to send their representatives to make an examination, and give them an opportunity to secure a working bond on it with the option to purchase. Of the moneys realised from the sale of properties 75 per cent. would be retained by the Government and would go towards defraying the expenses of the explorations, while the remaining 25 per cent. would be divided among the members of the party responsible for making the original discovery. This latter provision is suggested as being not only a fair one, but as an incentive to activity on the part of the men who enter this service."

* * * *

Engineers and Aviation.

The successful flight across the Atlantic by the British aeroplane was the occasion of congratulatory remarks by Mr. W. Elsdon-Dew, President of the South African Institute of Engineers. Mr. Elsdon-Dew said: "It will be gratifying to members of this institution to know that the pilot, Sir A. W. Brown, K.O.B.E., is a member of this institution. Your Council took the opportunity of writing to him congratulating him on the marvellous achievement which he had succeeded in accomplishing, a thing of pluck and endurance which will ever remain an outstanding one in the already remarkable history of aerial flights. Your Council has felt that such a feat, and the conditions under which it has been accomplished, merited the institution's most cordial approbation, and I have formally to move, on behalf of the Council, the following resolution: 'That Sir A. W. Brown be made an honorary member of this institution, and that he be formally put up for ballot at the next general meeting.' The resolution was unanimously adopted.

* * * *

Central Mining Engineer's Report.

The annual report of the consulting engineer to the Central Mining and Investment Corporation invariably contains items of interest to other mining engineers, and the report just issued is no exception to the rule. This document, signed by Mr. Hugh Marriott, shows that the Witwatersrand gold mines of the Central Mining Rand Mines group were responsible for the following proportion of the aggregate Rand results in 1918: Tonnage milled, 15.5 per cent.; yield, 17.1 per cent.; costs, 48.2 per cent.; working profit, 43.3 per cent.; dividends declared, 51.2 per cent. In 1917 the tonnage milled was 45.7 per cent. and the dividend percentage was 51.9. Four members of the group produced no profit last year. As regards labour, the mines of the group had 11,227 whites and 71,958 natives in their employ at the end of 1918, as compared with 11,138

white and 80,890 coloured labourers at the end of 1917. Mr. Marriott also gives the following information: "Ventilation: The total fan capacity now installed on the mines of the group is 3,335,000 cubic feet per minute. Health: The death rate from disease of all natives employed by members of the native labour organisations for the year was 21.0 per thousand, as against 10.7 per thousand for the previous year. This increase was almost entirely due to the extension of the influenza epidemic throughout South Africa during October and November, which was responsible for a death rate of 9.7 per thousand. The accident rate for the year was 2.7 per thousand, as against 2.9 for the previous year. Mining: The adoption of the circular type of shaft is becoming more general. The chief advantages are greater rapidity in sinking, elimination of timbering and greater capacity for ventilation. Four shafts on this principle have been laid out during the year to facilitate the exploitation of the deeper levels of existing mines. The ultimate depths to which they will be carried vary between 1,800 ft. and 7,000 ft. vertical. Sandfilling: The total amount of sand returned below in the mines of the group since the commencement of this method of supporting the underground workings is 9,603,508 tons. The amount sent down last year was 1,170,671 tons. Cementation: Operations by means of the François cementation process have been continued throughout the year and have been the means of sealing off feeders of water which would otherwise have caused heavy initial and constant charges on working costs. It is now considered possible by this method of treatment to reduce water difficulties to a minimum during sinking operations. Metallurgical practice: The average gold content of the sand and slime residues of the ore treated for the year is 1.31s. per ton milled, being .06s. more than for the previous year. The total gold recovered gave an average of 29.1s. per ton milled, which, on a basis of mill yield plus pulp, shows an extraction of 96.1 per cent., as against 97.0 per cent. for 1917. General: The standardisation of engineering supplies has progressed under the recent stringent conditions, and the extension of the principle will be of considerable benefit to the industry." *Aprpos* of the Chemical and Metallurgical Corporation, which has acquired the patent rights of a process for the effective treatment of zinc, lead and silver ores, Mr. Hugh Marriott writes that "arrangements are being made to introduce the process in the various mining centres of the world where suitable ores exist."

* * * *

S.A. Association for the Advancement of Science.

"Race-Consciousness and the Scientific Spirit" was the title of the presidential address delivered by Rev. W. Flint, D.D., in connection with this week's congress of the S.A. Association for the Advancement of Science. After examining at considerable length certain policies in which, he affirmed, no satisfactory solution of the problems dealt with could be found, the speaker proceeded: There remains what science points out as the only true method of dealing with such a question as this: The clear conception of the facts involved in race consciousness, the candid recognition of the basal right of all races and every human being to live and advance, which must be followed by such readjustments of social and political relationships as may be found desirable and practicable. It is here we find great fundamental factors neglected, and a trailing of false scents across the line which confuses the main issue. The mental hysteria which has been manifested here and there in South Africa and in the Southern States of America in pogrom-like attacks on natives is at once lowering to our conception of the white race, and an intensifying of the complications already involved in our problem. We dare not contemplate the idea of turning South Africa into a permanently armed camp as between white and coloured races, and the cost of tolerance and helpfulness on the part of the white man towards the native may as well be faced honestly and fearlessly. Otherwise we force the matter into the hands of the agitator, whose opportunities will increase and not lessen as the years pass, unless the nation is aroused to its responsibilities.

TOPICS OF THE WEEK.

THE BOOM IN DIAMONDS.

"DIAMOND producing companies," said Sir Lionel Phillips, with characteristic caution, at the Central Mining meeting the other day, "are doing very well." Their prosperity, he might with truth have added, is, as Whistler said of Nature, "creeping up." In fact, there is something very nearly approaching a boom in the production and sale of the stones, and the latest cables from London give no indication that the market is likely to relapse. The shares of De Beers, the Premier and New Jagersfontein all reflect the present excellent state of affairs, and the natural result is to bring back into prominence the shares of old mines and to hasten the flotation of new ones. Among the former may be mentioned the resuscitation of the Crown Diamond mine and the Frank Smith mine, the success of which, we understand, will mean the re-opening of other now dormant producers. The world-wide demand for diamonds, due to causes into which we need not enter, and which seem to vary in different countries, is of course the main reason for the active market, but there is also the policy of regulating the output and controlling the quantity placed on the market. "Never," said the chairman of the New Jagersfontein recently, has that policy "shown more substantial and beneficial results than during the last few years. It has had a steadying effect, which has inspired confidence in the future of the industry; and in the benefits accruing not only do we as shareholders participate, but also the State. We have reason to be gratified with the success achieved, for the diamond market to-day is in a more prosperous condition than ever previously known. It has taken many years of advocacy to secure the co-operation of the large producers in this policy; and they have arrived at this desirable end largely by the weighty support and influence exercised by our biggest shareholder and colleague, Mr. S. B. Joel." To Mr. Joel credit must certainly be given for recognising that the great danger to the market is over-supply. When we remember that since the date of the discovery of diamonds in this country in 1870 we have produced stones to the value of over £200,000,000, and that we are adding to that stones valued at the rate of from seven to ten millions annually, it will be seen how great is the necessity for a delicate handling of the market in the interests of this country, which is still in the happy position of having a world's monopoly. The only serious competition met with hitherto came from German South-West Africa, which up to the end of 1913 had produced stones to the value of over £7,000,000, and in that year alone stones valued at nearly £3,000,000. Fortunately for other producers, the diamonds, though of good quality, are generally very small, and only compete with the Union goods in certain classes. After German South-West Africa, Brazil came next in order, but exact figures of recent outputs of that country are not available, and the estimates are too divergent to be accepted without reserve. The world's production from all other sources appears to be only a matter of a few thousand carats, and of no practical account. As Messrs. Frood and Trevor, the Government Inspectors, remind us, the matter of internal control of production has been a consideration of immensely greater importance than the danger of outside competition has hitherto proved. Apart from industrial uses, the diamond is purely and industrially an article of luxury, and its value is just what people are disposed to give for it. The price is thus to a large extent fictitious. "Accordingly, as the mines of South Africa are much more than capable of meeting the demands of the world's markets, it is essential that some guarantee be given and maintained that, instead of internecine competition, there shall be a fair and equitable arrangement whereby the mines agree to a joint production sufficient to meet these demands, and no more. The immense strength and resources of the combinations now organised and controlling the industry to this purpose provide the strongest assurance against any possible danger in this direction."

ANOTHER WEST RAND MINE REVIVED.

The Armistice Syndicate and the Steyn Estate—Interesting Developments on Doornkop—Past Fluctuations and Present Prospects—A Rich Ore Body—The Mill on Zuurbult.

A DECIDEDLY interesting feature of developments on the Witwatersrand at the present day is the attention which is being afforded derelict properties. In recent issues we have referred to the probable revival of the Western Rand Estates property in the near future and to the re-opening of certain portions of the old French Rand mine at Luipaardsvlei. It has more than once been shown that the former workers of the Rand's old mines did not always secure the best results from their propositions, and in several instances the workers who have taken over these properties have reaped rich harvests where former owners for various reasons had only secured failure.

THE NEW STEYN ESTATE.

Another West Rand property of which one has heard nothing, or next to nothing, for a good many years is about to be re-opened. This is the Steyn Estate, to the south of Roodepoort. Some little time ago the titles to the western mynpacht of this property lapsed, and this has been secured by an enterprise styled the Armistice Syndicate, Ltd., which has a capital of £12,500 in 5s. shares. Of these 2,500 shares are held in reserve and 6,000 shares were taken up at 7s. 6d. The Armistice Syndicate propose to re-open the old mine, from which encouraging results were obtained in the past.

WHAT PAST RECORDS DISCLOSE.

The old reports of the directors of the New Steyn Estate Gold Mines, Ltd., show that nearly a quarter of a century ago this company had great hopes of demonstrating the existence of a large and profitable mine on Vlaktefontein and Doornkop. Thus in the report submitted at a meeting of shareholders held on Friday, December 14, 1894, it was stated of the Steyn Estate:

At a depth of 80 feet we struck reef formation, which, as we continued sinking, became more and more distinct, and at a depth of 100 feet we had the great satisfaction of encountering the reef as a solid body $2\frac{1}{2}$ feet wide, assaying 1 oz. 8 dwts. Drives on the reef were put in immediately, the measurement to date being, on the east side 66 feet and on the west side 44 feet. The drive in the latter direction has exposed a splendid body of ore, varying in width from $2\frac{1}{2}$ to 3 feet, fire assays of which are given below, samples having been taken across the reef at distances of 7 feet apart. We further sunk an incline shaft from the surface 1,200 feet west of the main vertical shaft, and carried it to a depth of 125 feet. This was done with a view of locating the reef, but with the meagre appliances at hand it was impossible to continue sinking the shaft, as the water was constantly gaining on us, and we were therefore obliged to discontinue this work, feeling satisfied, however, of the existence of the reef in that portion of the mynpacht. . . . Portion of the farm Vlaktefontein, 3,500 acres with a mynpacht thereon. This farm adjoins Roodepoort, on which the Durban Roodepoort United Main Reef, and Princess Estate are situate. The position of your mynpacht is on the extreme northern line of Vlaktefontein and southern line of Roodepoort, and consists of about 251 claims. As a deep level proposition we consider that the mynpacht is of considerable value. . . . It is not our intention to go fully into details here, but to give shareholders an opportunity of forming their own idea of the value of their property, we shall recapitulate the result of crushing under the past management. . . . A grand total of ore, crushed with a mill of inferior quality, of 5,003 tons yielded 3,908 ozs. 3 dwts., or 15.63 dwts. per ton. These figures, together with the assays taken later, speak for themselves, and your directors have no hesitation in predicting a prosperous career for your company.

At the meeting held on October 2, 1895, the chairman said he had hoped to be able to speak in more encouraging terms of the mine on Doornkop. Twelve months ago the

development of that mine showed such splendid results that it was an unpleasant surprise to him and to his co-directors when they found out that the reef was not as good as it was when he addressed them last. They were then down about 140 feet, and the reef on that level gave about 13 dwts. They then sunk a shaft, and struck the reef at 240 feet, where it assayed 1 oz. 8 dwts. 10 grs. in a body of ore $2\frac{1}{2}$ feet in width. It continued to show good for about 70 feet. They then sunk a winze from the 240 to the 340 feet level in order to follow up the pay shoot, but he regretted to say that the assays in the continuation of the shaft began to get poorer. In consequence of this they stopped all heavy expenditure on development and confined themselves to prospecting the property. He would, however, candidly admit that he was not as hopeful as to their property on Doornkop as he was six or eight months ago.

The report for the year ending June 30, 1896, states: Doornkop: The accompanying report of your consulting engineer gives full details of the work done, and the policy which has been followed in the development of your Doornkop property. Occasionally such rich patches of ore have been met with in exploiting the ground for 300 feet down from surface, that great hopes were at one time entertained of finding a sufficiently extended deposit above this level. Generally, however, the results of the work have not been encouraging, and although the nature and course of the reef have been now clearly defined, yet the work has mainly gone to show that any future hopes for the property rest on much more extended prospecting and developing operations. Your directors do not look forward with much hope to good results being obtained from this portion of your estate. Vlaktefontein: The engineer's report deals very fully with this, the most valuable, of your holdings, and your directors have little to add to the information which the report sets before you. As soon as the time is ripe, the exploitation of this section of your holdings will be taken in hand, but your directors consider that no advantage is to be gained by hastening the development of the property, more especially in view of the reduction in labour and other costs which are being effected on the Rand, and of valuable information which the shafts now being sunk on intervening properties will afford for the guidance of work on your property. Your directors are confident that the value of the property will largely increase as the development on adjoining deep level ventures advances.

In the consulting engineer's report it was stated: For some time past the work on the Doornkop mynpacht has been almost entirely confined to acquiring data on which to decide as to the direction which more extended developments should take. From time to time in the course of the work done patches of rich ore have been encountered, and have led to the hope that, if the reef be opened further away from the disturbing influences at the outcrop it may be found as a permanent and valuable deposit. It has been deemed a better policy to first ascertain by prospecting work the mode of occurrence of the reef, and the nature of the extensive strike faults which were at first quite obscure, rather than at once entering on permanent and costly works, which, in the absence of a fuller knowledge of the deviations of the reef might in the end prove quite valueless.

VARYING FORTUNES.

These extracts from the report give a representative idea of the fluctuating fortunes of the New Steyn Estate Company in developing its reef or reefs on Doornkop and Vlaktefontein. After these disappointing results the property became idle, but in 1898 Mr. Thorburn bought the Steyn Estate dump for £500. He put up a 5-stamp mill south of the main incline shaft and crushed the dump ore as well as perhaps 100 tons he took from pillars left in the mine.

He crushed about 4,000 tons and was still crushing and doing well when the Boer War started. Mr. Thorburn had frequently been underground and was well acquainted with the workings at one time, and his recollection is that the main shaft is nearly 400 feet deep and that both the 140 feet and 240 feet levels spoken of in the company's reports are connected with it. His recollection is that the 140 feet level vertically from the surface was about 1,100 feet in length and that after the reconstruction no stoping was done. He also states his belief that all ore crushed before reconstruction was taken from inclines mostly on the eastern end of the property and to the best of his knowledge no ore was stoped at a greater depth anywhere on incline from the surface than 100 feet, which would leave about 200 feet at 140 feet vertical from the surface still to remove above the long level. He considers the best values lie to the west of the main shaft and between there and Bottomley's workings, and that above the long level and partly-developed by it at least 30,000 tons of ore are available. Several reefs of little or no value are exposed in the main shaft below the one which carries values, and Mr. Thorburn thinks the reef worked is the only one of value in the claims, but that it is permanent and will be valuable to and beyond the northern boundary of Doornkop.

THE SYNDICATE'S POLICY.

The Armistice Syndicate now intends to re-open the property and it is considered that a considerable tonnage of payable ore can be recovered from the mine. It is, moreover, believed that by careful prospecting the reef may be located in its true position. For some little while past Mr. Bottomley has been working on Zuurbult adjoining Doornkop. He has erected a 10-stamp battery there and the Armistice Syndicate has arranged to lease this mill. The reef on Doornkop, it may be remarked, has a diabase hanging

and a quartzite footwall and its efforts to solve the problems which puzzled the technical advisers of the New Steyn Estate Company twenty-four or twenty-five years ago will be watched with the keenest interest.

The Lonely Mine.

The following are particulars of the output of gold, etc., for the above mine for the month of June, 1919: Mill ran 670 hours, crushed 4,520 tons; fine gold recovered, 1,900.250 ozs.; value, £7,989 9s. 11d.; slimes treated, 4,520 tons; fine gold recovered, 3,805.559 ozs.; value, £16,003 0s. 5d.; total fine gold, 5,705.809 ozs.; total value, £23,992 10s. 1d.; profit, £12,966 8s. 9d.

New Kleinfontein.

The report of the directors of the New Kleinfontein for the quarter ended 30th June, 1919, is as follows:—Mine: Shaft sinking: Number of feet sunk, 140 ft.; number of feet ore bins, etc., 80 ft. Development (excluding shafts): Number of feet driven, risen and sunk, excluding boxholes, 3,668 ft.; footage sampled, 2,385 ft.; footage sampled (payable), 1,110 ft.; mining width (payable), 55 in.; assay value (payable), 11.56 dwts.; number of feet boxholed for sampling purposes, 113 ft. Ore treatment: Ore milled, 171,210 tons. Capital expenditure: Shaft sinking and equipment, £7,643. Revenue and expenditure: Working costs, £214,181, or 25s. per ton milled; revenue, £207,554, or 24s. 3d. per ton milled; leaving a loss of £6,627. No allowance has been made in the above statement for interest, amounting to £2,544.

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JOHANNESBURG.

ARE WE TO GET MORE FOR OUR GOLD?

The Influence of a Local Mint—The Extra Four Shillings an Ounce Report—How the Industry and the Country would Benefit—Incalculable Gains—Gold Values and the Problem of the Poor Mines—How Individual Properties Would be Affected.

A REPORT that the gold mines of South Africa are going to receive four shillings per ounce more for their gold in the near future has received a great deal of credence in market circles during the week.

THE PRICE OF GOLD.

The increased price rumour has taken shape in various forms, some of which are too absurd to merit any belief. It has, for instance, been stated that the price of gold is going to be put up to the extent of four shillings an ounce, whilst others have declared that the measure of increase is five shillings, or even as much as five shillings and threepence. Obviously this is financially and economically impossible. Gold is the basis of credit and as such has a fixed and standard value. It is clear that there must be some such stable factor upon which to base all other prices, and it is obvious too that such a factor must be constant. If gold as gold, the basis upon which currency, the rates of exchange and the prices of labour and commodities rest, is increased in price or has its factor of stability impaired, the finances of the world would quickly get into such a complicated tangle that all the bankers and money experts would be unable to unravel the tangled skein. Utter chaos would very soon prevail because we should have nothing fixed or standard upon which to base values. We can therefore at once dismiss the fiction that the price of gold is going to be advanced.

GOLD, LABOUR AND COMMODITIES.

But on the other hand it is a well-established and widely-known fact that South Africa does not get full value for the gold produced. We have often alluded to the handicaps which are imposed upon the gold mining industry in this respect. Whilst labour and all commodities have been steadily rising in price, gold has not appreciated—it cannot appreciate for the reasons already stated. But during the war period it has actually cost us more than hitherto to market our produce. Gold realisation and refining charges, insurance, etc., have all advanced and have put an increasingly heavy burden upon the industry, already heavily weighted down by great increases in the cost of operation. We have repeatedly referred at length to this most important subject in recent issues of this journal, to gold values in relation to commodities and effort, to the establishment of a local mint, and to the influence of a waning gold production upon the world at large.

Dr. Caldecott gave further valuable and interesting testimony on the subject before the Low-Grade Mines Commission during the week, and little or nothing can be added to his masterly and elaborate statement of the subject. The new point which we wish to make here, however (and it is a point of the utmost value to the gold mines and the country at large), is that there are strong reasons for believing that we shall in the near future be marketing our gold on 4s. per ounce better terms than we are doing at present.

HOW AN INCREASE MIGHT COME ABOUT.

This will probably be effected not by one sweeping stroke of the pen but by the combination of a number of factors concerned with refining and realisation charges, insurance, freight, rates of exchange and the selling of gold in the most favoured market, dependent on the operations of the local mint or better offers for our gold from the Bank of England. The situation is a delicate one and will require careful handling. It will call for a nice appreciation of the relative demands of different countries for gold coin, and a close touch with the market in commodity gold. As we understand the position to-day, a fine ounce of gold has a fixed

value of £124773, or, say, nearly 85s. per ounce, but the Rand mines only obtain 77s. 9d. for their product. This wide margin would seem to afford considerable scope for obtaining a better price for our production. It would seem that an additional 4s. is within the bounds of probability, and if this is obtained, as fairly reliable report says it will be in the near future, the effect on the industry it need hardly be said will be beneficial in the extreme. This report is the somewhat belated result of the Government's decision to erect a local mint at Pretoria. We have frequently alluded to the tremendous importance of such an establishment, to the savings to the industry a local mint would result in, and we have repeatedly directed attention to the initiative of gentlemen prominently connected with the industry (and particularly Mr. Sam Evans), who have been instrumental in compelling the Government to realise that the establishment of a local mint would result in a tremendous relief to the gold mines. From all we can gather, the Bank of England has not viewed the Union Government's Mint Bill with composure, as obviously the loss of the great bulk of South Africa's output would be a severe blow to the principal gold refinery of the world. It is now stated that the Bank of England has made a counter proposal to the establishment of a mint at Pretoria and that this proposal means an additional 4s. per ounce to our gold mines. Whether the counter proposal will be received with favour locally or whether the mint will be proceeded with we are unable to say at this juncture, but at any rate it appears reasonable to anticipate a better price for our gold, or rather a less cost in its realisation in the near future.

WHAT THE RAND WOULD GAIN.

At the present time the mines of the Witwatersrand are producing at the rate of roughly three millions sterling, or 706,160 ozs., per month (these figures are based on the last May output, May having 31 working days). This is approximately 8,470,000 ozs. per annum, and an additional 4s. per ounce on this total would mean an extra £1,694,000 per annum. This extra amount would be distributed amongst all mines, rich and poor, but the increase in profit would of course vary according to grade, tonnage milled and working costs. An increase of £1,694,000 per annum in our gold production without additional crushing effort or cost would substantially increase the dividends of the large and rich profit earners, and it would enable many poor mines which at present are working at a loss to earn profits. It would also greatly prolong the life of the Rand as a whole by automatically transferring large tonnages of ore at present reckoned unpayable, from the unprofitable to the profitable side of the ledger. The benefits direct and indirect not only to the mining industry but to the country as a whole are well-nigh incalculable. The subject is far too comprehensive to be dealt with in a single article. But it may here be worth while as giving an instance of the effect of such an increase, to record the improved profits that would accrue to a few typical mines.

INDIVIDUAL MINES.

To the New Modderfontein, for example, an additional 4s. per ounce would mean an extra 2s. per ton milled, or £100,000 per annum. Crown Mines would benefit to the extent of £11,000 per month, East Rand Proprietary by nearly £7,000 per month, and the Consolidated Main Reef by £3,400 per month. The Knights Deep would gain £12,000 per annum, and Modder Deep nearly ten per cent. on its capital. Randfontein would benefit to the extent of £8,000 per month and Government Areas by more than £120,000 per annum. These improvements are based on current earnings only; they do not take into account the very substantial increases in the value and the tonnages of ore in reserve.

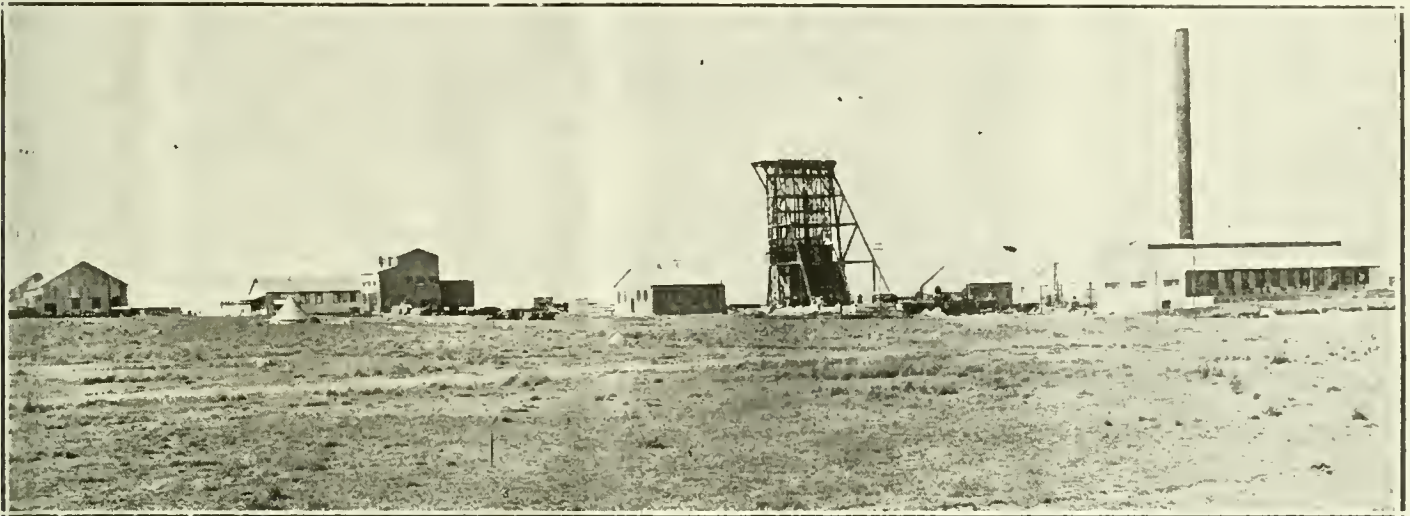
EXCELLENT PROGRESS AT THE CONSOLIDATED MINES SELECTION SUBSIDIARIES.

Position at Springs Showing Improvement—West Springs Assays—Good Footages in Several Shafts of the Group.

A BRIEF survey of the positions obtaining at the subsidiary properties of the Consolidated Mines Selection Company is contained in the appended notes which have just been obtained through the courtesy of the technical control of the group. At the Springs Mines the position appears to be showing signs of improvement and there are reasons for believing that the period of maximum difficulty has been surmounted. So far the current month promises to provide a substantially larger mill tonnage than was secured by the company in June. At West Springs the results secured through driving from the Springs property continue to be encouraging. The June sampling gave 10.14 dwts over 41.6

ins. and the average over 190 feet of driving to date is 10.58 dwts. over 32.5 ins.

Excellent progress is being made in shaft sinking at the mines of the group. In the No. 3 shaft at Springs Mines 216 feet were sunk during June, and it is anticipated that an even better footage will be secured this month. This shaft is now in the Kimberley Reef series and when the basement slates of this formation are reached it will be possible to make a fairly accurate forecast as to the depth at which the reef will be encountered. The rate of sinking in this shaft, which is a seven compartment rectangular equipped with buckets, is very good. The footage attained last month is indeed believed to be a record



SPRINGS WEST: GENERAL VIEW OF PROPERTY AT NO. 1 SHAFT



SPRINGS WEST: GENERAL VIEW OF NO. 1 SHAFT

for bucket sinking on the Witwatersrand. At Daggafontein No. 2 shaft the permanent pump chamber at the 2,100 ft. level is being cut. This will be completed very shortly and it is anticipated that sinking will be resumed at the end of the month. This shaft, like the No. 3 Springs, is now in the Kimberley Reef series, but the conglomerates have been found to contain no value. The two circular shafts at Brakpan are progressing favourably. In June No. 3 shaft was sunk 165 feet and a pump chamber was cut, and in No. 4 192 feet were sunk. The total depths of these shafts

at the end of last month were, No. 3, 1,176 feet; No. 4, 1,853 feet. It is expected the reef will be intersected in No. 3 shaft at about 4,000 feet and in No. 4 at from 4,000 to 4,500 feet. It is expected to achieve something like 200 feet of sinking in No. 3 shaft during the current month and almost the same at No. 4. At the West Springs property everything is now ready for steady sinking at No. 1 shaft, which, it may be remembered, unfortunately caved a few months ago. The No. 1 shaft is now down to 58 feet and the No. 2 to 224 feet. This latter shaft is in dolomite.

Tin Research.

The annual report for 1918-19 of the Tin and Tungsten Research Board under the Department of Scientific and Industrial Research, states that the tin mining industry of Cornwall has been worked over a long period of time with considerable energy and skill. Many ingenious mechanical appliances have been invented in that county in connection with mining operations and the extraction of the mineral from the matrix. Dressing appliances have been closely studied and gradually improved, but no consistent effort by combination among the producers was made to improve the percentage of extraction until 1916, when the Institution of Mining and Metallurgy, in co-operation with the Royal Cornwall Polytechnic Society, and with the approval and financial assistance of the Committee of the Privy Council for Scientific and Industrial Research, raised a small fund and initiated experimental research. A Tin and Tungsten Research Committee was formed, which had the assistance of the Cornish Research Sub-Committee and the Camborne Research Committee. Attention was particularly directed to ore dressing, with a view to improvement in appliances and their use. Professor Truscott did some valuable work, to which reference was made in the annual report of the Committee of the Privy Council for Scientific and Industrial Research for 1916-17. The funds available, however, were very limited in amount. Towards the end of 1917, the Department of the Ministry of Munitions for the Development of Mineral Resources took the matter up, and a successful meeting was held, with Sir Lionel Phillips, the Director of the Department, in the chair. The meeting was attended by Sir Frank Heath, Department of Scientific and Industrial Research, Mr. Edgar Taylor, President of the Institution of Mining and Metallurgy, and representatives of the Duchy of Cornwall, of the Royal Cornwall Polytechnic Society, of the Research Committee, and of a number of influential land owners and mining companies. Larger resources supplied by the Government rendered it possible to extend experimental research. Not only were laboratory experiments multiplied, but attention was given to proving upon a more practical scale results that appeared promising. The initial calls upon the Research Fund have not been very heavy because the operations are still in the earlier stages. When, however, it becomes necessary to demonstrate upon a working scale any process that may appear promising in the laboratory, the charge upon the Board's resources will become very much greater. During the period under review the Board met on twelve occasions, having held their first meeting in February, 1918. One of the meetings was held in Camborne, in order that members might have an opportunity of inspecting the research work in progress there, besides familiarising themselves with Cornish ore dressing practice, and the difficulties that militate against a higher recovery of the mineral contents of the ore. The Board gathered much useful information from this visit, and they believe it was helpful to the Committees in Cornwall. Owing to the war, considerable difficulties have been experienced during the year in securing the services of suitable research workers and materials for their operations, so that, had normal conditions prevailed, the progress would no doubt have been more rapid. Appended to the report are notes by Sir Thomas K. Rose, giving a

description of the research work that has been done, with results so far obtained, and an account of discussions entered into for the furtherance of research. It has been thought desirable in the national interest to publish some of the results obtained in the form of papers read before the Institution of Mining and Metallurgy and printed in their Transactions. The papers read during the period were as follows: "The Wet Assay of Low-Grade Tin Ores," H. W. Hutchin; "The Uses of Cinchonine in the Assay of Tungsten Minerals," H. W. Hutchin; "Recovery and Losses of Tin at Giew Mill," the Cornish Sub-Committee; "Giew Mill Test-Elutriation of the Crushed Products," S. J. Truscott; "Effect of Heating and Quenching Cornish Tin Ores before Crushing," Arthur Yates; "Slime Treatment on Cornish Frames—Supplements," S. J. Truscott. As the outcome of an advertisement in the technical press inviting firms and others associated with metallurgical chemistry to undertake research work with a view to the introduction of improved processes for the extraction of tin and tungsten from Cornish ores, negotiations have been entered into with various competent persons, who have been invited to make preliminary tests with a view to submitting to the Board any schemes of research they may devise.

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LATEST REPORTS FROM THE ALBU MINES.

We cull the following from the reports of the companies of the General Mining and Finance Corporation for the quarter ended June 30, 1919:—

AURORA WEST.

Loss for the quarter, £5,507 8s. 10d. The expenditure on capital account amounted to £2,320 11s. 6d. The quarter's results were adversely affected by a breakdown of the mill engine on June 20, and since repairs were not completed till July 15, operations for the current quarter will suffer to some extent. The development footage sampled totalled 710 feet, and gave the following results over an average stoping width of 42 inches: Payable, 380 feet, having an average value of 13.77 dwts.; unpayable, 330 feet, having an average value of 3.22 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

MEYER AND CHARLTON.

Profit for the quarter, £70,320 10s. 3d. A percentage of 10.8668 of the net produce from mining operations is payable to the Government in respect of certain undermining rights leased to the company. The expenditure on capital account for the quarter amounted to £183 1s. 2d. The profit exceeds by £6,222 the previous quarter's declaration. The development footage sampled totalled 390 feet, and gave the following results over an average stoping width of 48 inches: Payable, 350 feet, having an average value of 17.63 dwts.; unpayable, 40 feet, having an average value of 1.92 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

NEW GOCH.

Loss for the quarter, £582 16s. 1d. The expenditure on capital account amounted to £7,460 5s. 1d. The development footage sampled totalled 840 feet, and gave the following results over an average stoping width of 51 inches: Payable, 570 feet, having an average value of 6.93 dwts.; unpayable, 270 feet, having an average value of 2.93 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

ROODEPOORT U.M.R.

Loss for the quarter, £4,621 7s. 7d. The expenditure on capital account amounted to £1,617 14s. 11d. The development footage sampled totalled 505 feet, and gave the following results over an average stoping width of 45.2 inches: Payable, 395 feet, having an average value of 8.7 dwts.; unpayable, 110 feet, having an average value of 4.1 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

VAN RYN G.M. ESTATE.

Profit for the quarter, £16,658 0s. 8d. The expenditure on capital account amounted to £12 8s. 10d. The profit, including £1,534 farm revenue, exceeds by £3,878 the previous quarter's declaration. The development footage sampled totalled 985 feet, and gave the following results over an average stoping width of 48 inches: Payable, 675 feet, having an average value of 10.2 dwts.; unpayable, 310 feet, having an average value of 2.2 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may be subsequently considered advisable when compiling the ore reserves.

WEST RAND CONSOLIDATED.

Profit for the quarter, £4,103 7s. 4d. The expenditure on capital account amounted to £5,825 17s. 2d. Of the development footage accomplished during the quarter, 2,000 feet were sampled, and gave the following results over an average stoping width of 47 inches: Payable, 1,025 feet, having an average value of 11.42 dwts.; unpayable, 975 feet, having an average value of 2.64 dwts. These values represent the actual results of sampling, no allowance having been made for any reductions which may subsequently be considered advisable when compiling the ore reserves.

Mr. T. G. Ironside, M.A., B.Sc., Edin., formerly of the staff of Nobel's Explosives Co., Ardeer, Scotland, arrived in Johannesburg on Monday. Mr. Ironside has been appointed to the position of Acting Manager and Chemist to the South African Nitrate and Potash Corporation, Ltd., and left for Prieska on Thursday to take up his duties.

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NEW OUTLOOK FOR SOUTH-WEST DIAMONDS.

SOUTH-WEST Diamonds have entered on a new and more solid phase of existence. The secretary writes:—I am authorised to convey the following information for the benefit of shareholders in the above-named company: As regards to sea operations (in the area under contract with the Union Government), as is generally known, the s.s. Nautilus which had been chartered and equipped by the company was lost before the commencement of operations. After great difficulty it was only possible to secure a small whaling vessel, the s.s. Eclair, of 165 tons gross tonnage, to carry on preliminary operations, but owing to the unsuitability of the vessel it was only possible to crudely test spots indicated and no extensive exploration work could be undertaken. The results obtained were unsatisfactory and inconclusive, only one diamond of $1\frac{1}{4}$ carats being recovered in South Bay from a depth of $3\frac{1}{2}$ fathoms. On the advice of Mr. J. H. Wilson (acting under instructions from the company's technical advisers), who finally took charge of these operations, it was decided to suspend further efforts for the present. Mr. J. H. Wilson's and Mr. L. D. Street's reports in this connection are available for the inspection of shareholders at the company's offices. The company has recently secured by outright purchase the following properties in the South-West Protectorate: Diamond area known as "Cimbria," situate near the company's area known as "Claratal," also areas known as "Kolmanskop Bahnfelder," consisting of 13 fields and situated within the diamond belt south of Luderitzbucht. The above properties are in addition to the eight areas previously reported as having been acquired from the Bergbau Gesellschaft Company, the most southerly of which areas, "Levinstal," immediately adjoins the Pomona diamond fields. The total area purchased by the company is approximately 10 square miles in extent. The company also holds under option the

rights and interests of the Diamanten Aktiengesellschaft and the Diamantfelder Verwertungsgesellschaft Konzeption-bucht m.b.h. in the properties known as the northern fields, in extent 1,200 fields, approximately 50 square miles. These fields have already been examined and the company has received a satisfactory preliminary report from its engineer, but owing to the great extent of the areas a further and fuller report will be submitted in due course. Other valuable rights are held, but are subject to certain conditions requiring confirmation from overseas. Since the company acquired these areas prospecting operations have been conducted in order to test the values of these fields by means of trenching, etc. During the course of these tests prior to June 30 last 415 carats were recovered: whilst during the current month a $6\frac{3}{4}$ carat stone of exceptional quality was found on the company's area, "Claratal," which we are advised by telegram has been valued at £250. Prospecting on this area has disclosed particularly rich deposits. Reports indicate that underlying deposits are opening up in a satisfactory manner, and fuller information under this head will be notified at a later date. The tests above referred to warrant the board in attacking this area on a large scale, and as a preliminary measure 10 machines of an up-to-date pattern have been ordered and are expected to be in commission at an early date, so that before long regular returns may be anticipated. Regarding the company's area, "Nautilus," which is the only area held by the company north of Luderitzbucht, it is proposed to take advantage of an attractive offer to lease this area on a basis of the company receiving in cash 10 per cent. of the gross value of all diamonds won. The agreement will provide for continuous working and a minimum number of machines. Owing to its situation this area cannot be economically worked in conjunction with the southern fields of the company.

The Mines and Efficiency.

In the course of his presidential address, read before the S.A. Institution of Engineers last week, Mr. Elsdon-Dew asked what had been the cause of the inefficiency which now affected the economic working of the mines? As shown by Mr. C. D. Leslie, the costs per ton for white labour on the mines had gone up from 4s. 4d. in 1914 to 7s. 6d. in 1919, and for native labour from 4s., 1914, to 6s. 1d. in 1919. These figures applied to a few mines only, and when commuted into money the loss on the tonnage equalled £656,000 per annum, of which 75 per cent., or £492,000, represented loss from decreased average output per man. During the war, they had to "carry on" with just what had offered. Unfortunately, the example shown by those inferior workmen, wherever they might have come from, had had a seriously deteriorating effect on the native force. All that had to be put right. Just realise what a difference it would mean if the efficiency on the mines were brought back to what it was before the war, and with the co-operation of every worker, he ventured to say that it could be even better. Now, it had to be recognised that the economic position of the low grade mines was very seriously affected and threatening, and many might have to be closed down unless some means were provided whereby they could be made to pay their way. What would be the conditions here on the Rand of so many being thrown out of employment? It did not affect the so-called working man only. They were all working men; it affected the whole community, and it was obviously up to those who were able to evolve a solution to do so. Confidence in the mining industry had to be revived, and by the Special Commission lately appointed by the Government to go into this matter, with Sir Robert Kotzé as chairman, they could hope that the Commission's report would be a clear and authoritative statement of what was necessary. The members of the Institution had a pressing duty to perform in assisting to get back that economic balance for the industry which was necessary

for its progressive continuity. The Institution had a most important duty to perform for South Africa (now that the world's business could return to peaceful expansion), and that was to assist in the development of her resources. If any evidence was required to prove that South Africa was expanding, it was only necessary to refer to the money invested in industries and the expansion during the war, and the value of the products from those industries. The capital invested now exceeded 60 millions, and last year's return of the value of the products showed a similar figure of over 60 millions. As Great Britain realised as soon as the war started that certain key industries were out of her control, so the war had shown South Africa the necessity to open out and develop certain of her own requirements.

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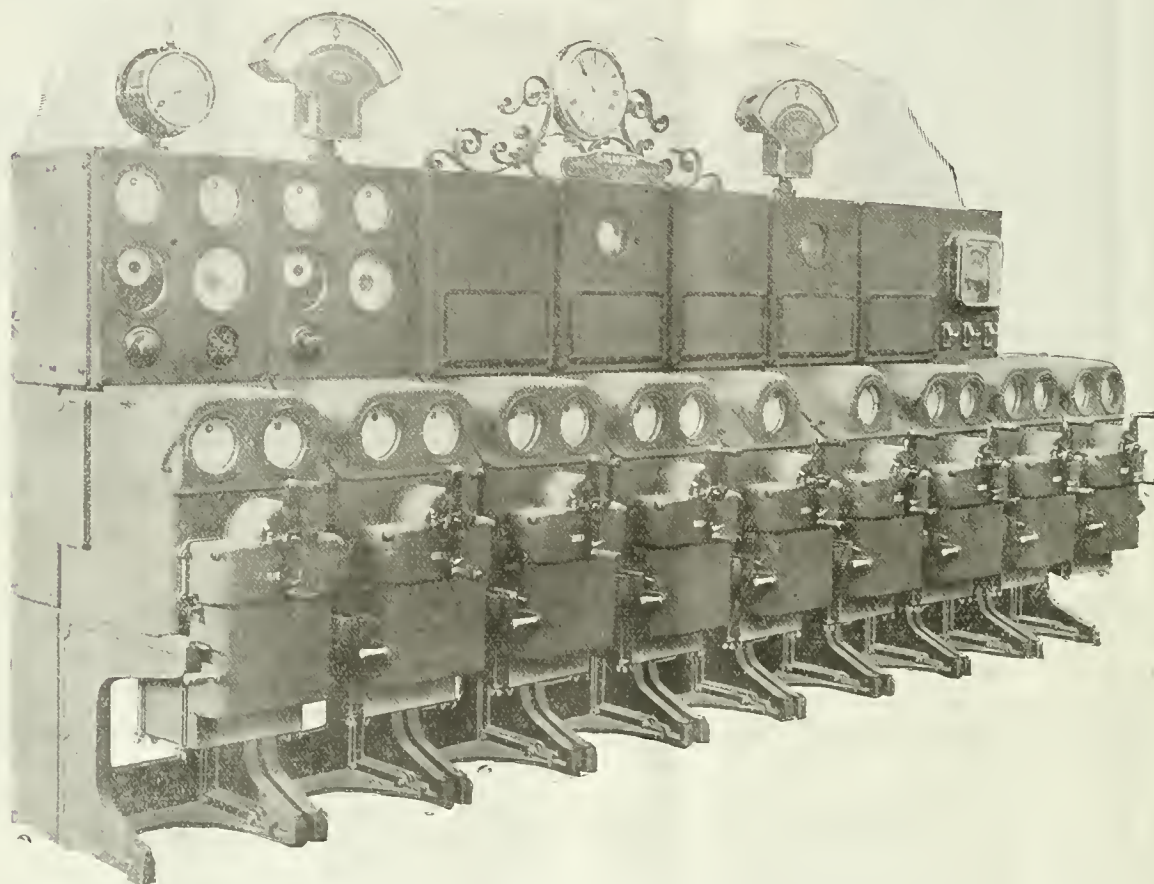
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THE CEMENTATION PROCESS.

Summary of Rand Applications—English Colliery Successes—Australian Developments—Big Savings Effected.

BY N. S. STUCKEY.

A paper by Mr. A. H. Krynauf, dealing with the cementation process as developed by M. Francois and applied in South Africa and elsewhere was read at the May, 1918, meeting of the Chemical Metallurgical and Mining Society of South Africa.

Very great benefit has been obtained by the use of the process at the Daggafontein and Brakpan Mines in shaft sinking and driving work and for sealing underground dams, etc. Holes bored by diamond drill to a depth of 180 feet and cemented at pressures up to 2,000 lb. per square inch were used in one case for sealing fissures in dolomite rock, 55 tons of cement being used in the operation. This was for shaft sinking purposes at the Daggafontein No. 2 shaft, size of shaft being 49 feet by 9 feet in seven compartments. In this case the Francois process was used in preference to the Portier process (although the distinction between the two processes is not important).

At the Brakpan mine an extremely heavy and sudden flow of water was met in sinking a circular shaft 20 ft. in diameter. It broke through into the shaft bottom immediately after firing out. To deal with it a concrete mat was put down in the shaft bottom, pipes being embedded in the concrete to accommodate the water and prevent it washing out the green concrete. These pipes being used after the concrete had set for pumping in the cement under pressure. The rock was dolomite underlying a syenite dyke.

In another application at the East Rand Proprietary Mine cement was used for sealing fissures in a tunnel. This cement showed in the west shaft a distance of 1,500 ft. away, thus demonstrating the large area of rock fissures that might be filled in one operation.

The area filled does not depend so much on the pressure used as upon the width of the crack and the nature of the rock.

Numerous applications of the process have recently been made in England for colliery shafts, etc.

At Hatfield Main Colliery cementation was decided on in preference to freezing in passing through the porous rock known as the "New Red Sandstone." A lecture delivered by the manager of the Hatfield Main Colliery, Mr. H. N. Berry, before a recent meeting of the National Association of Colliery Managers gives many interesting details of the cementation work as carried out there. The flow of water is stated to have been too great to sink through by ordinary pumping processes.

The cement was injected at pressures up to 1,200 lb. per square inch, and an important modification of the original Francois process was made by first using silicate of soda and sulphate of alumina solutions pumped into the holes before the cement, the object being to lubricate the fissures with the gelatinous precipitate produced, and which also prevented the packing of loose sand grains ahead of the cement.

This object was fully attained, and holes into which it was impossible at first to get any cement after the use of the chemical mixture took tons of cement mixture and were quite successful in sealing back the water. "New Red Sandstone" is very porous, showing under some tests for porosity 37 per cent. of voids. The fissures were vertical and parallel with no horizontal fissures. Specially finely ground cement was used, and the mixture was arranged to be slow setting. Mr. Berry gave many interesting details of the difficulties met with and the manner in which they were overcome. Other rocks in which cementation has been successfully used in England include limestones, sandstones, chalk and shales.

The static head of water successfully sealed back has been as high as 560 lb. per square inch, and, personally, I can see no limit to the pressure of water that can be dealt with except the limits imposed by the strength of the pipes and pumps used. It is merely a matter of injecting the cement at sufficient pressure to give a strong, thick wall of impregnated rock round the excavations to be made.

At the Edna May Deep Levels mine, Westonia, Western Australia, cementing was adopted quite independently of any knowledge that a similar process was in use elsewhere, and every detail of the materials and machinery used was worked out on the mine. In so doing we have come to somewhat different conclusions from those arrived at in other places where the Francois process has been used.

Thus we recognised from the first that the water must be kept confined and allowed no outlet except through boreholes. The neglect of this provision has in several cases caused great expense elsewhere. If the water is allowed free outlet by blasting operations it becomes necessary to provide pumps equal to dealing with the whole flow before it can be again brought under control by concreting and cementing. It will be noted that diamond drilling affords the best means of testing the ground ahead for water and also for providing the whole through which to pump the cement, in that a gland can be used on the rod and no water at all need be allowed to escape into the mine.

Then, instead of a slow setting cement we prefer a rather quick setting one. To avoid loss of time in waiting for the set of the cement after being mixed and before being fed to the pump to take out any hardened lumps or pieces of paper or board from the barrels.

Further, we regard it as unnecessary to have a specially finely ground cement, but the cement pulp should be put through a screen after being mixed and before being fed to the pump to take out any hardened lumps or pieces of paper or board from the barrels.

We have come to the conclusion that it is quite immaterial how thin a mixture of cement and water is used, and that it is best to use a mixture fluid enough to flow readily and that has no tendency to pack in the valves of the pump. The pump should be of the simplest design possible giving a direct and constant flow to the pulp. It should be as light as the very great stresses set up will allow in order to permit of easy handling underground, hence cast-iron should be avoided as far as practicable.

In the Francois process special pipes were forged to make the connection with the rock. In some rocks these were found unsuitable, and the connection was made by boring the hole a short distance, then inserting the pipe and fixing it with cement, and afterwards boring the hole on until it struck the water. This, though effective, is slow. The method devised at the Deep Levels of an annular wooden wedge closely fitted round a piece of $1\frac{1}{2}$ in. pipe, and forced into the hole and further secured by iron wedges driven into the wood has proved completely effective for water pressures up to 130 lb. per square inch, and for pump pressures up to 1,500 lb. per square inch.

An alternative method that would be effective in all cases would be to bore holes in the rock alongside the cementing hole for holding down bolts.

At the Deep Levels mine both diamond drill and reciprocating rock drills have been used for boring the holes. The diamond drill is the best, as the hole can be made any depth and the subsequent cementing will secure the water over the whole area penetrated by the hole.

But, in practice, the ordinary rock drill holes are much the cheapest, although this would not be the case in shaft sinking through a big depth of porous strata when a diamond drill or calyx drill should certainly be used.

M. Francois has used sawdust to take up leakages from the fissures before cementing was started. At the Deep Levels we have used sawdust pumped in before the cement to stop leakages, but we found that crushed or whole oats and sometimes bran were preferable.

The process as patented in Australia, Canada and New Zealand by myself contains a chemical variation involving the pumping of alternating solutions of calcium chloride and sodium silicate into the fissures or into the rock mass if porous enough, until no more can be pumped in owing to the deposition of solid calcium silicate in the rock. I am confident that the fissures in a very large mass of rock could be permanently sealed in this way, and that such a group of mines as exist at Westonia could be entirely protected against the inflow of water once the soft oxidised rocks near the surface were passed through.

Before the war sodium silicate and calcium chloride could be obtained in commercial grades fit for such purposes at about £8 10s. per ton.

If a cheap salt could be found to give an insoluble precipitate when mixed with salt water such as the ppt. of AgCl thrown down when AgNO₃ and NaCl solutions are mixed the problem would be greatly simplified.

Where the mine waters carry sulphates in even small quantity, the pumping in of a solution of calcium chloride alone would permanently seal all fissures and voids with gypsum.

I look forward with confidence to the more extended use of such methods of dealing with mine waters in place of pumping them in the future. The great economy of dealing with underground water problems in this way will undoubtedly save many hundreds of thousands of pounds now spent in the Sisyphean work of pumping.

Indications of oil have been discovered in the territory, says the *Livingstone Mail*, but the locality has not been disclosed. Prospecting operations are being undertaken immediately.

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AN ENGINEERING REVIEW OF THE MINING CRISIS.—II.

Valedictory Address of the Retiring President of the South African Institution of Engineers,
Mr. C. D. Leslie.

The other serious disability to which I would refer is the price paid for our gold. This question has received some attention in the Press, but its importance is by no means generally realised. In fact the matter is often disposed of by saying, as did the British Government Commission under Lord Inchcape's chairmanship, that gold cannot be paid for at more than its value. Prior to the war, with a free market for gold and a limited convertible British paper currency, this argument was applicable, but during the war and at the present time, conditions have profoundly changed. The world upheaval and unrest, passing now from the military to the economic and trading stage, have induced an enormous increase in the demand for gold, accentuated by the desire of various countries to acquire this metal to establish a gold standard, and by banks wishing to stabilise their paper issues by means of enhanced gold reserves. Through various legislative restrictions on export and import our mines can only dispose of their gold to the Bank of England, and are paid for it (apart from gold coin for wages) in a depreciated paper currency. Owing to legislative restrictions, metallic gold, in spite of the demand for it, is the only commodity here which has not increased in value, although with a free world market, including freedom of export to India and South America, it could now be sold at a premium so high as to add several millions yearly to the purchase price of our gold output. We have every desire to see British paper currency stabilised, but not at the expense of the gold producers. The position is that many mines are threatened with extinction, largely through the present state of affairs. Probably the imperative need of the Bank of England for our gold, and our equally great need to receive its full value, could be met by the Bank paying us for it in a bank credit equal to the highest price obtainable for metallic gold in any other country, less the cost of transport there. The establishment of a local refinery and mint, by reducing gold realisation charge, would afford a limited measure of relief, but a far more radical measure must be carried out promptly to secure the full share of relief required from this direction to avert a disastrous collapse, which considerations both of equity and expediency should have prevented. I must refer, briefly, to the killing effect of the great rise which has taken place in the cost of mine supplies. In this respect the Government could afford much relief in Custom dues and railway rates as previously mentioned, and might well emulate the example of Australia in acquiring a mercantile fleet for the purpose of lowering the charges on ocean freights. The mining industry could do a great deal to help itself in this matter of stores, not only by standardization and direct wholesale purchase of mine supplies, but also by greater economy in their use. Organisation and a process of education to prevent wastefulness are much needed. Now I come to the question of reduced output per employee, with consequent waste of capital, labour, stores and supervision. Under this heading it would be appropriate to refer to the prevailing complaint known as "Shortage of Native Labour," which can be mitigated to a considerable extent by more efficient work and further advance in the mechanical replacement of labour. While it is true that the Rand mines as a whole suffer from shortage of native labour and that the advent of 10,000 to 20,000 more natives would materially brighten the prospects of the low-grade mines, it is obvious also that there is wastefulness in the disposal of natives and slackness in working them. With the willing and co-operative help of all concerned, some of the mines might even dispense with some of their natives for the benefit of the mines which have the most urgent need of them. If, for instance, the operation of jack hammer stopping was exercised expertly and diligently, so that it became more profitable than hand stopping, a large proportion of the 34,000 natives now employed in hand drilling would be available for other work. This would entail an appreciable average improve-

ment in jack hammer efficiency, equal perhaps to that being obtained by the miners now giving best results in jack hammer stopping, say the leading 30 per cent. of these miners. It is a question of intelligent and industrious effort which would impose no hardship. The refusal to recruit natives from north of latitude 22 I regard as a colossal blunder, for which this country is likely to pay a very heavy price. There is reason for believing that a searching enquiry would show that such action could not be truly defended upon humanitarian grounds, i.e., because of the ill-effect on health which underground work might have on these natives as compared with those from south of latitude 22. If that was the only reason there would appear to be no valid objection to the recruitment of these northern natives for agriculture, irrigation, railways, etc., and also for surface work on mines and various industries, so as to release southern natives for underground work. On a few mines with which I am well acquainted the output has fallen since 1914 by 73 tons per native per annum, entailing for an equal tonnage, the employment of an additional 5,600 natives, or, on the basis of the 1914 output per native, a loss of 950,000 tons per annum. The following additional information respecting those few mines is instructive:—

LABOUR COST.			
	1914. per ton.	1919. per ton.	Increase per ton.
Whites	4 4	7 3	3 2
Natives	4 -	6 1	2 1
Total	8 4	13 7	5 3

An analysis of the above figures brings to light the following results:—

INCREASE IN LABOUR COST PER TON IN 1919 AS COMPARED WITH 1914.			
	Due to Higher Wages.	Due to lower average output per man.	Total.
Whites	1 1	2 1	3 2
Natives	3	1 10	2 1
1 4 = 25 4/5 3, 11 = 74 6/10 5 3 = 100 %			

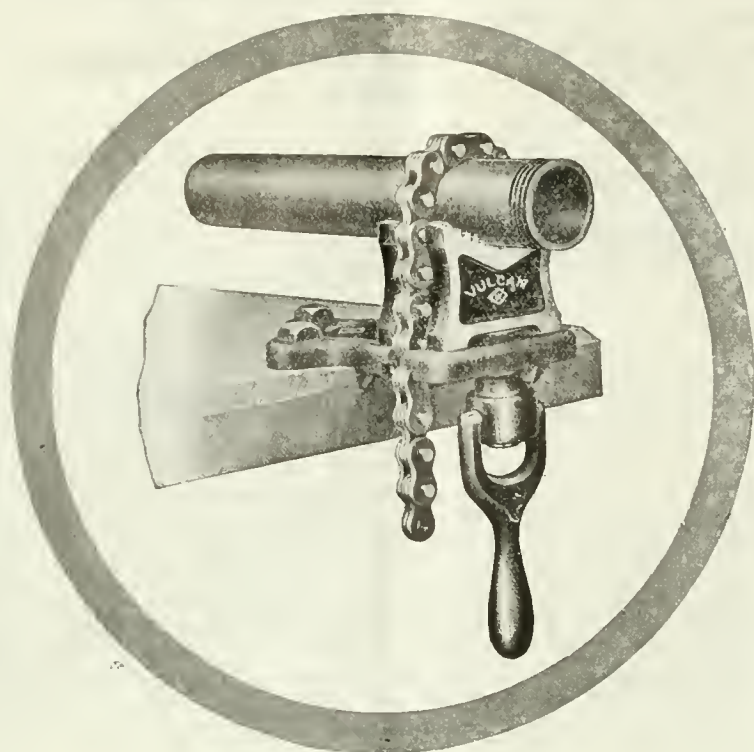
The figures apply to a few mines with an output of approximately 2,500,000 tons per annum, so that the 5s. 3d. per ton increase in labour cost alone is accountable for a

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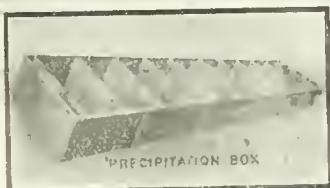
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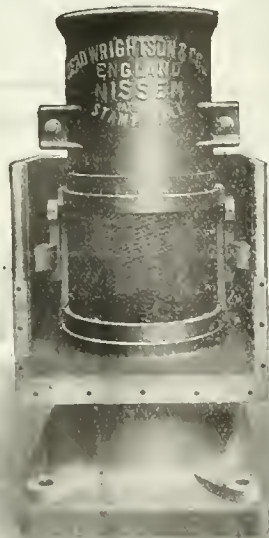
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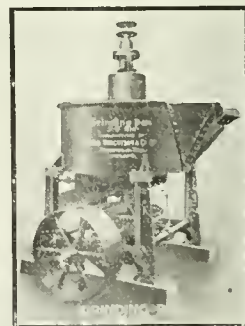
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loss on this tonnage at the rate of £656,000 per annum, of which 75 per cent., or £492,000, represents the loss from decreased average output per man. From the same cause (lower output per man) the increased cost per ton in other directions also amounts to a great sum of money annually. For example, if each miner, with his complement of labour and equipment, broke five tons of ore more or less per day, the total cost of mine and plant maintenance, mine supplies, supervision, general charges and so forth, would not be much affected, but the cost per ton under these headings would alter very materially. The reduced output per man is chiefly attributable to shorter hours of labour since 1st January, 1918, the absence on active service of skilled supervisors and workmen, which created a shortage of efficient men, extended work in connection with the support of mine workings, and the general discontent, with all it leads to, which pervades every section of mine employees, supervision and workmen alike. Reversion to a forty-eight hours' week, face to face, would be the most immediate practical form of relief which could be given to the low-grade mines. I estimate the improvement in output from this step at approximately two days additional tonnage per month, or a further 1,500,000 tons per annum for the whole Rand, employing the same labour force. On the present basis of work this would represent the annual output of an additional 10,000 natives. If applied to the low-grade mines only, this change in hours of work would make them unpopular, and this would have a detrimental effect on the recruitment of labour. The discontent has resulted largely from slackness in the work of mining, ignorance and neglect of what Mr. J. F. Kemp terms "the human side of mining engineering," and from an administration which has gradually become top-heavy. Acting, no doubt, with the best of intentions, the Government has rather overwhelmed the mining industry with a plethora of regulations, to comply

with which underground supervisors often have to neglect such important operations as the breaking and transport of ore, and have not sufficient time to specialise on improvements or on any branch of work requiring particular attention. With members of the House of Assembly it has become an unfortunate habit to interfere with the mining industry—the backbone of South Africa—and to treat it harshly and unsympathetically, thereby provoking ill-feeling and antagonism. The workmen continue to exact more and more from the mining industry, unmindful of the prosperity it has conferred upon them, and I pray that they may not bring disaster and suffering upon themselves as a result of going too far in their own interests and not far enough to further the work on which they are employed. A large proportion of the mine employees do not even regard their employment on the mines as permanent occupation, but rather as a means of earning money to get on the land, and this tends to aggravate the situation. The whole country preys on and irritates the mining industry, and "the Press" misses the opportunity of exercising its influence against the general persecution. Yet this much-abused industry has set a good example to South Africa of fair, square and open dealing. It has raised the position of its mine employees beyond that obtaining in any other mining camp in the world, and, to pay the bill, it requires able and willing service performed with loyal regard to securing the most successful results. As a consequence of interference from all sides, the mine manager too often finds himself standing very much alone, hardly knowing who or where to look to for sympathy and support. He realises that the royal road to progress and contentment is found by preserving intact the chain of discipline, so that every man is made responsible to his immediate chief, since no man can serve two masters. Unfortunately this policy is not always applied to himself, and, in the effort to please everyone, he is often forced to take the line of least resistance. The mine managements, their workmen and the super-powers that be, should be most careful to guard against emulation of the man, his son and his ass in AEsop's famous fable. My advice is to make sure of getting for the mine manager sympathetic help and support from all those in positions above and under him—always through the proper channels—carefully avoiding interference with any member of his staff, so that he may have strength, good-will and example to do as he is done by. To sum up, I would say that, in respect of indirect taxation, gold marketing, labour, hours of work, stores, all-round economy and efficiency, the low-grade mines could be accorded sufficient relief to enable them to continue working until a large proportion of their remaining ore is exhausted. In recognising that this is a national question, do not be misled by the absurd idea that the Government alone can save the situation. My great fear is that those concerned will fail to realise the seriousness of the position until it is too late, when they would be more than willing to accord the full measure of assistance which they withhold to-day. It is announced that soon a Government Commission will enquire into the position of the low-grade mines. It will have to be very soon or the examination will be a *post mortem* one. Think of a depleted Treasury and picture a multitude of the white population of South Africa brought to destitution by the end of this year through the closing down of the low-grade mines. Ask yourselves if it is likely that these people will submit peaceably to joining the ranks of the "poor white" and to be subjected to pauperism or charity employment. In conclusion, I would quote from Lloyd George's speech at the opening of Parliament in February of this year: "It is only workmen who have passed through unemployment who know the terrors of it and what it means to their households." Unfortunately, many people in this country have experienced the truth of these words, and I would warn the community at large to see to it that the blight of poverty and unemployment does not settle upon the people or touch the returned soldier.

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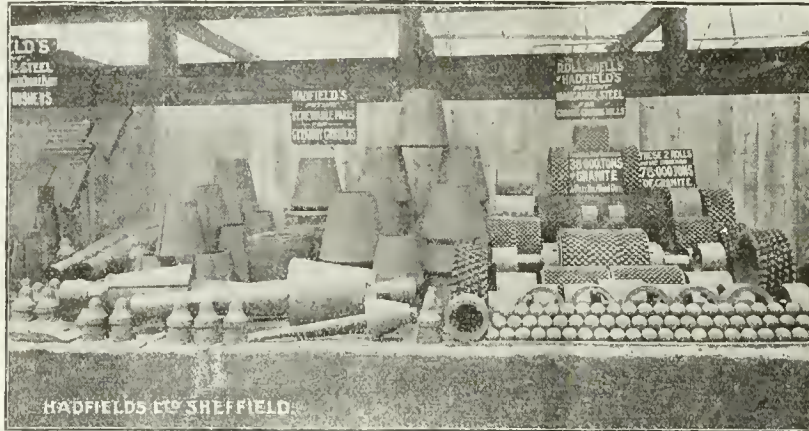
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THE WEEK IN THE SHAREMARKET.

Modder East Flutter—Big rise in Debentures.

The opening of business on Friday brought a bit of a run on Frank Smiths, which put them up to 5s. 8d. and 5s. 7d. At the call prices were in the main somewhat better, with the exception of Rose Deeps with seller at 15s.; Van Ryn Deeps and Modder Easts, which have once more had a setback after their recent spurt. Crown Diamonds, which at one time touched 21s. 6d. on the previous day, had a rapid recovery to 23s. 9d. The market opened on Saturday with sales of Zaaipplaats at 8s. 7d.; New States at 26s.; Frank Smiths at 5s. 8d.; Modder Easts at 21s. 7½d.; and Crown Diamonds at 24s. 9d. The tone at the call was more cheerful, with improvements in Brakpans, Crown Diamonds, Modder Easts, New Modders and Modder Deeps. Later on Modder Easts advanced to 22s. sales and buyers. On Monday Modder Easts and the Options were the opening feature, the first-named reaching 22s. 9d., the four-year Options 6s., and the three-years 4s. At the call there were no setbacks, but a general firming of prices without any sensational advances. Modder East Debentures were done at £114. The market hardened during the day, Modder Easts closing at between 23s. 6d. and 23s. 9d. The shouting at the opening on Tuesday almost recalled the old noisy and cheery days, but there was very little in it after all, ticky and penny-halfpenny differences in Modder Easts, with the nett result of the stock finishing at 23s. 6d. after commencing at 23s. 9d. The debentures were freely dealt in at £119 to £117 10s.; three-year Options fetched 4s. 9d. and 4s. 7d.; and four-year Options 6s. At the call prices were maintained, Modder Deeps forging well ahead of its rivals, and business done in Meyer and Charltons. Modder Easts dropped 3d., but the Options went better. In the afternoon there was a run on the Debentures which carried them to £134. African Farms at 14s. 6d. buyers showed an improvement. The market closed rather below the best. Modder Easts again controlled the early market on Wednesday, but somewhat on the down grade, finishing at 22s. 10½d. The Debentures started at £134, but rapidly fell away to £126, recovering to £127 10s. and £129. Prices were lower all round at the call with few exceptions such as City Deeps and Rooibergs, the latter gaining 1s. on the strength of the reported strike. The Modder East flutter died out on Thursday morning, only one transaction at 22s. 9d. being booked. The Debentures were quoted at £127 10s.—£130. No appreciable change in prices took place at the call. The outside dealings for the week comprised sales of Montelegos at 13s. 9d.; Sakalavas at 7s. 6d.; Compound Diamonds at from 15s. down to 12s.; Makganyenes at 29s. Buyers and sellers: Union Tins, 5s., buyer; Theron Diamonds, 15s., buyer; Koodoo Diamonds, 20s., seller; Henderson's Estates, ex div., 4s. 3d., buyer.

	Fri., 18th.	Sat., 19th.	Mon., 21st.	Tues., 22nd.	Wed., 23rd.	Thurs., 24th.
African Farms . . .	13 6*	13 9*	13 9*	14 1*	—	14 0*
Apex Mines . . .	—	7 0	—	7 3*	—	7 0*
Aurora Wests . . .	—	6 0*	6 0*	—	6 0*	—
Bantjes Cons. . . .	2 4*	2 5*	2 9	2 9*	2 8*	2 7*
Brakpan Mines . . .	57 6	60 0	57 6*	60 0*	61 6*	61 6*
British S.A.	21 0*	22 0	21 6*	—	22 0*	—
Bushveld Tins . . .	1 8	1 8	1 8	1 7*	1 7*	1 10
Cassel Coals	25 0*	25 0*	25 0*	25 0*	—	25 0*
Cinderella Cons. . .	—	4 9*	4 9*	—	4 9*	—
City and Subs. . . .	6 6*	6 0*	6 3*	7 3	7 0*	7 0
City Deeps	19 6*	19 0*	50 0*	51 0*	52 0*	52 6
Clydesdale Colls. . .	22 0*	—	—	22 6*	—	—
Con. Langlaagtes . .	—	—	18 0*	18 3*	18 3*	18 3*
Con. Main Reefs . . .	8 9	8 9*	8 10½	9 1*	9 1½	9 1½
Con. Mines Selse. . .	20 0*	21 0*	21 0*	—	22 0	21 6*
Coronation Colls. . .	—	60 0*	61 0*	—	—	—
Coronation Frees. . .	1 8	1 8*	1 9*	1 9*	1 11	1 9*
Coronation Synd. . .	—	2 6*	—	—	—	2 6*
Crown Dias.	23 9	25 0	24 9	24 0*	23 3	23 0
Crown Mines	—	38 6*	—	—	—	46 0*
Daggafontein Mines .	21 9*	21 9*	22 0	22 9	22 6*	22 0*
East Rand Coals . . .	2 4*	2 4*	2 4*	2 5*	2 5*	2 5*
East Rand Deeps . . .	1 0*	—	0 10*	0 11	—	0 10*

*Buyers. †Sellers. ‡Ex London. §Odd lots.

	Fri., 18th.	Sat., 19th.	Mon., 21st.	Tues., 22nd.	Wed., 23rd.	Thurs., 24th.
E.R. Minings	18 6*	19 6*	19 6*	20 0	20 0*	20 3*
East Rand Props. . .	5 3*	5 3*	5 6*	6 0*	5 6*	5 9*
East Rand Debs. . . .	£70†	£70†	£70†	£70†	—	£70†
Eastern Golds	1 2	1 3†	1 3†	1 3	1 2*	1 2*
Frank Smith Dias. . .	5 5	5 8	5 9	5 5	5 1*	4 9
Geduld Props.	16 3	16 0*	16 0*	16 9	16 0	16 3
Ginsbergs	1 7*	1 7*	1 7*	—	1 7*	1 7*
Glencains	1 0*	—	1 0*	1 0*	1 0	1 0*
Glencoe Colls.	—	—	—	—	5 0*	—
Govt. Areas	90 3	90 9	91 0	91 9	90 6	90 6
Jhb. Bd. of Execut. . .	30 0*	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	2 9*	2 11*	2 11*	3 6*	3 10*	3 9
Klerksdorp Props. . .	—	1 3*	1 3*	1 3*	1 3*	1 3*
Knight Centrals . . .	6 6*	6 9*	7 0	6 11	6 9	6 0*
Knights Deeps	5 6*	—	—	—	6 0*	6 9*
Lace Props.	16 3*	16 3*	17 6*	17 6*	17 3*	17 3
Leeuwpoot Tins	22 6*	23 6*	24 0	24 3	23 6*	24 0
Luipaardsvlei Est. . .	3 0*	3 0*	3 0*	3 0*	3 1*	3 1*
Lydenburg Farms . . .	8 4*	8 3*	8 6	8 6*	8 7	8 5*
Meyer and Charl. . . .	82 6*	—	80 0*	85 0	—	85 0*
Middelvlei Est. . . .	1 6*	1 8*	1 11	—	1 9*	1 9*
Modder B's	157 0†	155 0	155 6*	155 0*	160 0	157 6*
Modder Deep	155 6*	157 6*	160 0	162 6	162 0A	162 6
Modder Easts	21 3	21 7½	22 7½	23 3	22 10½	22 7½
Do. Options 3yrs. . . .	3 5	3 5*	4 0	1 9	1 9	4 8
Do. Options 4yrs. . . .	5 6†	5 0*	6 0	6 0	5 9	5 9
Hume Pipes	26 0*	26 6	22 6*	—	27 3	27 0*
Geduld Options	10 3	10 4*	10 3*	10 6	10 6	10 3*
Natal Navigat. Colls. .	—	—	—	—	22 0*	22 0*
National Banks	£15†	£15†	—	£15†	£15†	£15†
New Boksbuys	1 3*	—	—	1 3*	—	—
New Eland Dias. . . .	25 0*	25 0*	—	25 0*	25 0*	25 0*
New Era Cons.	10 3*	10 3*	10 3*	10 9	10 9*	11 0
New Geduld Deeps . . .	4 6*	4 6*	4 9†	4 6*	4 7*	4 7*
New Heriots	6 0*	6 0*	9 0†	9 0†	9 0†	—
New Kleinfonteins . . .	8 6*	8 6*	8 9*	9 6†	9 3	9 3*
New Modders	£26A	£26A	£26*	£26½A	£26½†	£26½†
New Primrose	1 6*	1 6*	—	2 0*	2 3*	2 0*
Nigels	5 6*	5 6*	5 6*	5 9*	6 0*	5 9*
Nourse Mines	8 9*	9 0*	9 3*	10 0†	10 0*	9 9*
Premier Debs.	—	—	—	—	157 6*	155 0*
Premier Prefrs.	—	—	—	150 0†	150 0†	150 0†
Pretoria Cements . . .	75 0	75 0	—	75 0*	—	—
Princess Estates . . .	2 4*	2 4*	2 6	2 6*	2 6	2 3*
Rand Colls.	—	—	3 0*	3 6	3 0*	3 0*
Rand Mines	—	—	—	—	65 0†	—
Rand Nucleus	1 7*	—	—	1 6*	1 6*	1 6*
Rand Select Corp. . . .	72 0*	74 0*	—	77 0†	76 0†	76 0†
Randfontein Deeps . . .	4 3	4 0*	4 0*	4 6*	4 8	4 5*
Randfontein Est. . . .	15 3*	15 6*	15 9*	15 0*	15 9*	15 3*
Roberts Victors	12 0*	12 6*	12 6*	13 6	13 0*	13 0*
Rooibergs	5 0*	6 3*	—	6 9*	7 9	7 10
Rose Deeps	15 0†	—	—	15 0†	12 6	—
Ryan Nigels	3 6*	—	3 6*	3 6*	3 6*	3 6*
Shebas	1 3*	—	1 3*	1 3*	1 3*	1 3*
Simmer and Jacks. . . .	—	—	—	—	5 0†	—
Simmer Deeps	—	—	1 0*	1 0*	1 0*	1 0*
S.A. Breweries	33 0*	—	33 0*	—	—	—
S.A. Lands	5 8	5 8*	5 9*	5 10*	5 9*	5 11
Springs Mines	48 3	48 6	48 6*	49 3	48 6A	48 0
Sub Nigels	21 9*	21 6*	22 0	22 3	21 9*	21 9
Swaziland Tins	18 6†	—	13 6*	17 0†	—	14 6*
Transvaal Lands	—	—	27 6*	27 6*	27 6*	27 6*
Trans. G.M. Est.	12 6*	13 0*	12 9*	—	13 0*	13 0*
Van Ryn Deeps	67 3*	67 3*	68 0	68 3	68 0	67 6*
Van Dyks	—	—	—	—	2 0*	—
Village Deeps	11 0*	11 3*	11 3*	12 0†	11 0*	11 0*
West Rand Cons.	3 6*	—	3 6*	4 0	3 9*	—
Western Rand Est. . . .	4 0*	1 3	4 4*	4 3*	4 6*	4 3*
Witbank Colls.	55 0*	57 6*	—	—	55 0*	—
Wit. Deeps	14 6*	14 6*	14 9	14 6*	14 3*	—
Wit. Townships	—	—	—	30 0*	30 0*	30 0*
Wolhuters	2 5	2 0*	2 6	2 9*	—	2 9*
Zaaipplaats Tins	7 2	8 4	7 6*	8 0	7 9*	6 11
Union 5 p.c.	£103*	£103½	£103*	£103½†	£103½*	£103½*
New State Areas	25 9*	26 0*	26 9	26 9	26 6*	26 6
S. Van Ryn	8 6	8 3*	8 3*	8 9	8 9*	8 11
S.A. Alkali	18 6	18 6*	18 6*	19 6	19 6	20 0
Tweefontein Colls. . . .	23 6*	24 6*	24 6	24 6*	24 6*	24 6*
Tudors	1 0	1 1†	1 3†	—	1 2*	1 3
West Springs	21 6*	22 0	22 3	22 6*	22 3	22 9
Potch. Estates	0 11*	0 11*	1 0	—	—	—
Rand Est. Debs.	£87½*	£87½*	—	£87½	£87½*	£87½*
Sub Nigels, 10s. pd. . .	11 6*	—	11 6*	12 3	12 0	11 6*
W. Springs Options . . .	4 9	4 6*	4 9*	5 0*	5 0*	5 3
De Beers Cons.	£213*	—	£22*	£23†	£23†	£22*

*Buyers. †Sellers. ‡Odd lots. §Ex London.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

A Dull Week, but Prospects Brighter—Electrical Materials and Peace Celebrations—Oils, Colours and Brushware—Iron and Steel—Timber and Roofing Iron—Various Trade Items—Manganese.

Dr. Caldecott, in giving evidence before the Low-Grade Mines Commission, said he did not think anyone could foretell the future price of any commodity, and the same thing applied to gold. This is very true indeed, as some new imported bar iron was sold this week by public auction at £23 per ton, as compared with about £60 before the armistice, and now the ordinary price from merchants is £35 per ton. This drop has been brought about by the quantities of iron and mild steel imported into the country since the armistice, a great portion of which was purchased by speculators, most of whom have never ventured in this trade before. The poor business registered during the past fortnight has more than ever created unrest amongst legitimate holders, and therefore commodities have been pressed into an unwilling market and no one seems inclined to buy more than actual requirements or to complete forward contracts. One hoped that before now a more optimistic statement could be made. A merchant on this subject remarked that business ought very soon to be better, as from week to week the mines were gradually using up their big reserves and naturally more orders will be placed amongst the merchants. It is said that one reason of business being so indifferent is that many mines are holding back all kinds of construction work pending the result of the Low-Grade Mines Commission, the price of gold, and such like. There was a general idea that some promising report would be forthcoming from this Commission, but so far nothing has transpired. There has been a good deal of comment in reference to General Smuts' remarks as to appeasing Germany. In this connection a leading merchant remarked that, notwithstanding one's own private opinions, he supposed trading again would be taking place with the middle European countries. He understood already that a large order for chemicals had been placed in Germany. The sum and substance of one's inquiries was that everything was much the same as last week, awaiting the consummation of the Peace festivities, as no doubt when General Botha arrives he will make certain speeches throughout his tour from Capetown to Pretoria and give some lead as to the future prospects of our gold mines in particular and South Africa in general. That certainly seems to be one of the

reasons for such a dull, tantalising trade despondency for the time being. A good pointer is that the censorship on cables has stopped and private codes can be used, which should soon relieve the congestion. And also it would seem that now Peace reigns the Governments will stop their practical monopoly, as so far the commercial community has been very patient and self-controlled—but there are limits.

ELECTRICAL MATERIALS AND PEACE CELEBRATIONS.

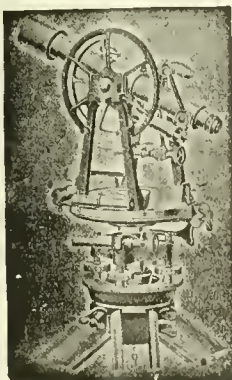
Considerable activity has been displayed throughout the town in connection with the electrical decorations, more particularly at the Town Hall, Post Office and the Law Courts, as well as business places. It has been unfortunate that we have been so short of certain material to make up these complete installations with their varied coloured lights. However, according to the contractors and workers, the wholesale houses have risen to the occasion and put themselves out to supply orders, and the contractors have accepted odd sizes, for example $\frac{3}{4}$ for $\frac{1}{2}$ and so on, to facilitate matters. Several firms have received advices from the Railway Department stating that consignments of various kinds of electrical goods are already on the rail and delivery is expected at any moment, which obviously will be in time to complete and extend the electrical decorations.

OILS, COLOURS AND BRUSHWARE.

The following are extracts from an interim trade report. It is said that prices in the paint line are hardening and do not show any tendency to come down at present, or in the near future. The whole world has to be painted, owing to the neglect during the period of the war, and we trust that for a year or so we shall see firm prices ruling for all materials in our line. Wages must necessarily remain high, also heavy taxation must be counted upon for years to come. Railway rates are dearer all over the world and working costs are higher, also timber for packing is more expensive and kegs are double the price of 1911. We must warn clients that all prices in our list will be advanced in August-September, as we cannot replace our stocks at the prices at which we are selling to-day. The only article which we believe will be cheaper is wallpaper, and prices should be easier in December, as manufacturers are now able to obtain wood pulp; therefore ample supplies will be available for the Christmas trade.

White Lead.—The market in England is very firm, although four advances have taken place since the armistice, and manufacturers are not eager to book forward. White lead in South Africa is being sold at a loss to-day owing to speculators outside the trade dealing with this line, and who have been unloading to meet their commitments. The price in Johannesburg is 65s. per 100 lbs. for unknown brands; the American Union brand is 75s.; and the Elephant—English brand—90s., which is absolutely pure.

Linseed Oil.—Indian and Argentine oil are being sold here at 2s. per gallon below Home prices. English genuine oil is 10s. 9d. in London to-day naked, and the market is very firm. Directly the speculators' stocks are absorbed oil will rapidly advance in South Africa. The sharp advance



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in England is due to Continental buying. Johannesburg's current quotations are: St. Paul's brand, 15s. 6d. per one imp. gall. drum; and 60s. per 4 galls. for the best English brand.

Turpentine.—The New York market has advanced 24s. per case in eight weeks, owing to the enormous demand. Quotations are 70s. per case of 2-4's; and 80s. for 10-1's.

Brushware.—Cable advices received recently advise a 10 per cent. increase on painters' brushes and 5 per cent. on household.

Varnishes.—In consequence of the heavy demands on our market, all varnishes advanced 2s. 6d. per gall. in London this week. Ceiling and copal varnish, 17s. 6d. per gall.; best knotting, 22s. 6d. per gall.; oak, 22s. 6d.; extra pale gold size, 27s. 6d.; finest black Japan, 27s. 6d.; best elastic copal, 30s.; and finest hard dry body varnish, 42s. per gall.

Glues.—Common, 1s. per lb.; town, 1s. 4d.; cabinet-makers' 1s. 8d.; and Russian, 2s. per lb.

Sheet Glass.—180 and 228 sheets per case, 95s. each; 10 x 12, 120 sheets per case, 100s.

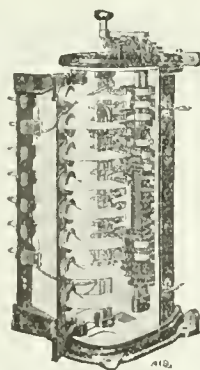
IRON AND STEEL.

It is stated that the Railway Department is supplying 60 lb. second-hand rails to the mines direct and to contractors who are making a siding or tramway track, but not to dealers. These rails chiefly came from German South-West. A quantity of new imported bar iron was sold at auction at £23 a ton. Big piping is not in such demand since the Hume cement pipes came into competition with them. The price of Dunswart bar iron is 30s.; and Vereeniging mild steel 35s. per 100 lbs. The ordinary price of imported bar iron is 35s. for big sizes and 37s. 6d. and 42s. 6d. for the smaller sizes. Canada is not at present quoting for wire nails, for which prices are very erratic, being much disturbed by auction sales in Durban and occasionally in Johannesburg. One peculiar fact about British mining material is that it now only consists of about 20 per cent. in Johannesburg as compared with Canada and America. Although the American and Canadian prices have advanced, yet at the moment British quotations are prohibitive. All the Johannesburg foundries are busily engaged on mine work, but work for the boilermakers is very scarce. This may be in consequence of the mines doing more of their own work, or it may be partly of endeavouring to make the old plant last as long as possible with a view of cheaper replenishment. It also must be borne in mind that with the Victoria Falls Power Company supplying electricity for motive purposes there must be a marked decrease of boilers in use. But again there has been a lot of work for boiler-makers at the various second-hand yards, who have sold practically all their high-pressure boilers to coal mines and progressive agriculturists. The second-hand market is partially busy, as there has been a big demand for 16 lb. rails and for tram trucks required by outside mining pro-

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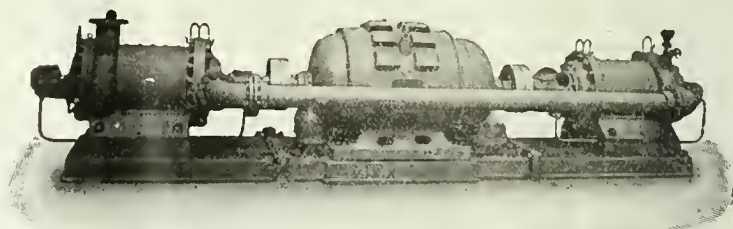
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positions. In consequence of big stocks of iron and steel coming in from overseas, much of the second hand is being sold under cost, more especially piping, at the weekly auction sales.

TIMBER AND ROOFING IRON.

The price of Baltic timber is still very firm. Deals are 1s. 6½d. to 1s. 7½d.; floorings, 8½d. to 8¾d.; ceilings, 6½d. to 6¾d.; clear pine and poplar, 1s. 6d.; and pitch pine and Oregon, 9s. There is not much timber on the water, but the news from the Baltic is that the tendency of values is upwards, but this is likely to be more than compensated for by cheaper freight now that the British Government have dispensed with most of their outside shipping since the Peace became an accomplished fact. As regards roofing iron, this is practically unobtainable in contract lots. Relief, however, may come by an expected shipment in about 11 days. The nominal prices are: 1s. 1d. for 24 gauge, and 1s. 1d. for 26 gauge. For second-hand timber and iron the demand is excellent, but orders cannot be fully supplied on account of the poorness of stocks. Business for the new material is quite good in Johannesburg, Reef and country for residential and building erections.

VARIOUS TRADE ITEMS.

A colliery had to be shut down for a few days in consequence of the railway facilities for trucks being so congested. An expert in sporting goods, particularly golf clubs and tennis requirements, states that there has been such an enormous demand in Britain for sporting goods of all kinds since the armistice that the markets had been swept bare, leaving hardly anything for export. When it is remembered that woods for the manufacture of golf clubs require a seasoning of at least twelve to eighteen months, it can easily be grasped that his prognostications that no further supplies from Britain could be expected here until about the middle of next year, is not very far out. New York cables state that brass and copper goods are advancing rapidly. The property market is not too bad, but seems to have caught the dullish trade position of the town generally. There are plenty of orders for furniture that cannot be executed on account of the unsatisfactory position of masters and men in anticipating a strike.

The Modderfontein Deep Levels, Ltd.

(Registered under the Limited Liability Laws of the Transvaal).

VESTED ENEMY SHARES PURCHASED FROM THE UNION CUSTODIAN OF ENEMY PROPERTY.

NOTICE IS HEREBY GIVEN that in the event of the Special Resolution passed at the Extraordinary General Meeting held on the 17th instant becoming effective, new shares of the nominal value of Five Shillings each will be issued pro rata in lieu of the old shares accepted under the offer to shareholders and also in lieu of the 23,819 old shares set aside for distribution as a portion of Dividend No. 9. The fractions of shares accruing to shareholders in respect of this dividend will thus be fractions of the new 5s. shares. Provisional arrangements have been made for the realisation of such fractions for the benefit of the shareholders concerned.

It is not anticipated that any delay will be involved by this change of procedure, and scrip in respect of both the acceptances and the dividend will probably be ready for issue during the second half of August.

By Order of the Board,

UNION CORPORATION, LIMITED, Secretaries.
per C. L. CHALMERS.

Head Office,
94, Main Street
(P.O. Box 1125), Johannesburg.

24th July, 1919.

Manganese.—Supplementary to the article which appeared in the *Mining and Engineering Journal* of the 5th inst., the following additional information will be of interest, viz.: With reference to the rich find of manganese di-oxide on the farms Swartkraus and Sterkfontein, a few miles from Krugersdorp, it is encouraging to know that the local consumption is such that the owners will be able to refuse export orders. This is as it should be, as in a short time all the manganese of this grade will be required for steel production. One large monthly order, now being negotiated, when accomplished will decide the question of export.

CAPE DIAMOND DIGGINGS OUT- PUT FOR JUNE.

Statement of the output of diamonds from the public diggings in the Cape Province during the month of June, 1919:—

BARKLY WEST.

Area.	No. of Diggers.	Weight. Carats.	Value.
Delpont's Hope	33	185½	£2,113 7 6
Eland's Drift	1	4½	35 0 0
Forlorn Hope	1	1½	6 10 0
Gong Gong	36	111½	1,156 5 0
Good Hope	69	207¾	1,805 10 0
Harrisdale	31	190¼	2,160 5 0
Hebron	71	311½	4,303 17 6
Holpan	25	129½	2,585 10 0
Kareepan	69	136¾	3,087 7 6
Keiskama	7	25½	282 10 0
Klipdun	42	196	2,122 5 0
Klipdrift	24	92	1,641 10 0
Last Hope	11	30¾	314 5 0
Longlands	25	137	1,576 0 0
Niekerk's Rush	8	68	902 7 6
Rickett's Pros.	1	1	41 0 0
Scholtz's Pros.	17	64¾	827 2 6
Snyder's Rush	11	53	464 5 0
Van Zoelen's Laagte	7	13½	88 0 0
Waldeck's Plant	11	103½	5,380 10 0
Ward's Hope	5	11½	120 10 0
Winter's Rush	18	98½	1,359 12 6
	562	2,812½	£35,006 10 0

N.B.—The number of claimholders in the Barkly West district during June, 1919, was 1,815.

HERBERT DISTRICT.

Brypael	25	78	990 7 6
David's Drift	1	1½	9 0 0
Mosesberg	22	112¾	2,158 15 0
Schmidt's Drift	45	194¼	2,276 0 0
	93	386½	£5,134 2 6

KIMBERLEY DISTRICT.

Robinson's Kopje	3	13¾	161 10 0
Wedberg	8	20¾	151 15 0
	11	31½	£313 5 0

TAUNGS DISTRICT.

Home Rule	131	1,991½	23,695 10 0
Killarney	8	49½	832 10 0
	139	2,041	£24,528 0 0

PRIVATE ESTATES.

River View Diamond Syndicate	162¾	2,163 10 0
New Vaal River D. & E. Syndicate	713¾	11,365 10 0
Pniel Estate	162½	2,444 10 0

The Week's Meetings.

UNION CORPORATION, LTD.

The annual general meeting of shareholders of Union Corporation, Limited, was held at 11 am. on July 11th, at the offices of the company, Main Street, Mr. F. W. Forbes presiding.

The chairman in moving the adoption of the report and accounts said:

In 1916 the Company made a profit of £97,497, apart from the considerable amount then written off shareholdings. In 1917 we showed £114,984 and in the accounts for 1918, now submitted, the figure is £145,380. The profit has therefore increased very satisfactorily in the last two years and I hope that the progression may be continued. By way of dividend we declare 12 per cent or 1s 6d., per share which is 50 per cent higher than the dividend for 1917, and after again placing £20,000 to reserve, we carry forward £45,364, against £24,984 brought into the accounts. From all points of view the figures now presented may be considered satisfactory. Our expenses stand at £31,839 as against £25,011 in 1917, the increase being partly the result of the higher revenue though the difference is mainly due to a falling off of £4,054 in fees received. Share profits have again been small, the year not being propitious for the realisation of holdings, and the major part of the increase in profits is due to larger dividends received.

Our excess of cash assets, Government securities and Sundry Debtors over Liabilities amounted to £254,887 at December 31st, as compared with £301,421 at the end of 1917, due to the fact that our money is more fully employed, and in this connection you will note that share and debenture holdings amounted to £777,816 against £656,533 at the end of the previous year. These shareholdings continue to be taken into the books at cost or under and the very considerable unrealised profit has been further substantially increased during the year.

Financial Guarantees.

Among the more important businesses undertaken by us was the guarantee by ourselves and our associates of the issue of 180,000 new shares by the Geduld Proprietary Mines towards the end of last year. This year we have similarly guaranteed offers of formerly enemy-owned shares of the Geduld Proprietary and Modderfontein Deep Levels Companies.

Last year we purchased at 13s. per share the enemy-owned shares in our own Company which constituted the whole of the shares vested in the Custodian of Enemy Property for the Union of South Africa, and these we offered to the British and Allied shareholders of the Company at the same price, with rather disappointing results. The balance of this parcel has since been disposed of and the shares have become widely spread. The shares dealt with by the Union Custodian comprised in the main those which were registered with enemy addresses. It appeared that apart from these there was an important number of shares mainly registered with English addresses which were the property of enemies. These were recently vested in the Public Trustee in England and have been bought by the Company at the price of 14s. per share. By this transaction the enemy interest may be said to have been completely eliminated. The directors consider it to be in the best interests of shareholders that these shares should, for the present, be retained by the company.

Realisation of Gold.

Dealing with the question of the future realisation of gold and the steps taken by a committee of the Gold Producers of the Empire to make representation to His Majesty's Government, it is unnecessary for me to emphasise the disappointment felt at the completely negative tenor of the Incheape Committee's report. Since that report was issued, facts have come to light which show how well founded the apprehensions were which induced the representatives of the gold mining industry to make their representations to the Imperial Government. Whereas they estimated in their submission that the world's gold output would show a decrease of 14 per cent. in 1918 as compared with the high water mark of £96,800,000 in 1915, the most recent figures of the gold production in 1918 show that the output had fallen to £77,600,000, which is equivalent to a reduction of 19½ per cent. compared with 1915. It is fairly safe to estimate that the current year will show a further decline in the gold production of the world. A statement made on April 16th by the Chancellor of the Exchequer in the House of Commons is of particular interest and importance to the gold mining industry. He said that "there was nothing in the report of Lord Incheape's Committee to suggest that producers of gold were not entitled to obtain for their produce the best price available in the most favourable market, and he was now considering in what manner that could be secured."

Rand's Output.

So far as the disposal of the Rand gold output is concerned, there are still war restrictions in force which prohibit its exportation except to the United Kingdom and British possessions. As long as these restrictions remain in force, the industry is, of course, prevented from disposing of its product in the best market. Recent reports from London justify the confident hope that negotiations proceeding there for the removal of these restrictions will soon lead to the desired result.

The Commonwealth of Australia some time ago permitted gold producers to experimentally ship gold abroad, with the result that the first consignment is reported to have fetched some 15 per cent. more than the mint price. From London comes the report that gold produced on the West Coast of Africa was recently sold in London (no doubt for industrial purposes) at a price of 100s. per fine ounce, which is considerably in excess of the gold premium indicated by the foreign exchange prices, which difference, however, should adjust itself to the level of the gold premium, as expressed in the exchanges, when once restrictions on the free disposal of gold from all sources have been swept away. It is not unreasonable to expect that the gold production of the Rand will then be capable of realisation at a price considerably in excess of that now received. The very difficult position in which the low-grade mines find themselves today, should by that means be somewhat mitigated.

In order to place the gold mining companies in a more advantageous position in the future, in regard to the disposal of their product, it has been decided to establish a refinery on the Rand under the control of the

mines and at the same time the Government will establish a mint at Pretoria.

Industry's Load

The heavy load of working expenses which is threatening to bring the low-grade mines to early inactivity has been materially swelled by the passing of the new Miners' Phtthisis Act, which increases very considerably the industry's payments in respect of past, present and future beneficiaries. That the industry has no desire to shirk its just and reasonable obligations in this direction is beyond dispute, but the increased burden imposed by the new Act is neither just nor reasonable and it would certainly appear that its incidence has not been realised in the passing of the measure through the legislative channels. I may mention that as the result of the sustained efforts of the industry during the last five years to improve the dust conditions of the mines, the average dust content of the mine air has been reduced by more than half.

As you are aware, a Commission has been appointed by the Government to enquire into and report upon the position of the low-grade mines, the effect the closing down of such mines would have, and the steps which can be taken by the Government towards assisting them to continue their operations. It is to be hoped that this Commission, which is now sitting, will speedily conclude its work, and that it will result in such practical assistance as will tide these mines over the present difficult period and avoid the far-reaching effects of a cessation of their operations.

I will now review briefly the present position of the companies in which our corporation is interested. I need not go into details of their operations during the past year, as this ground has already been fully covered by the directors and the consulting engineer in their reports, which are before you.

Modderfontein Deep Levels.

The highly satisfactory values disclosed by the development work—which, by the way, are still continuing—are being reflected in this company's milling results. During the first half of this year the average yield per ton has been just over 42s. 2½d., which is about 1s. 3½d. more than last year's average. The tonnage milled—253,700 tons—shows an increase of 1,100 tons as compared with the corresponding period of last year. Working costs at the remarkably low figure of 17s. 8½d. per ton are about 3d. per ton higher than in 1918. The half-year's operations have resulted in a working profit of 24s. 6d. per ton milled—1s. 0½d. above last year's average—and a gross profit of £311,305, which is £11,098 in excess of the profit for the same period of last year. In addition, a small amount was earned in interest. This profit was more than sufficient, after providing for taxation, charitable contributions, etc., to meet the dividend of 10s. per share which has been declared. This dividend, as no doubt you are aware, is to be distributed partly in scrip—£3,810 of the formerly enemy-owned shares recently purchased from the South African Custodian of Enemy Property having been set aside for distribution as dividend in the proportion of one share for every twenty shares held. These shares are being

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distributed on the basis of the purchase price of £6 12s. 6d., and the distribution is, therefore, equivalent to 6s. 7½d. per share; the balance of 3s. 4½d. per share is being paid in cash.

You probably are aware that a proposal is on foot to sub-divide the company's existing £1 shares into shares of the nominal value of 5s. each—a measure which should be of particular benefit to the large number of small shareholders in the company, who are mainly resident in the United Kingdom.

Geduld Proprietary Mines.

This company's operations during the first half of the current year reflect an increase of 4½d. in the yield per ton milled and a reduction of 1d. per ton milled in the working costs, as compared with 1918, the former averaging 29s. 6.28d. and the latter 19s. 11.14d. As a consequence, the working profit per ton milled is 5½d. higher at 9s. 7d., and the 254,700 tons crushed have given a total profit of £122,195, which is increased by sundry revenue to £126,950. This is an increase of 1,100 tons in the tonnage crushed and of £6,832 in the gross profit, as compared with the corresponding period of last year. In addition, a small amount has been earned in interest. The provision of the new capital—which is referred to in the directors' report—having rendered it no longer necessary to encroach so heavily upon profits for capital expenditure purposes, a satisfactory dividend could, in the ordinary course of events, have been declared for the half-year. But the directors of the company having set aside for distribution as dividend for the current year 85,185 of the formerly enemy-owned shares recently purchased from the South African Custodian of Enemy Property at £2 per share, only one distribution is to be made, the amount of which will be decided in December. The distribution will probably be in the proportion of two shares for every 25 shares held subject, of course, to the profits earned during the year justifying a distribution at that rate.

The capital of this company is now £1,151,824, holders of the option certificates carrying the right to take up shares at 40s. at any time prior to December 31st, 1921, having availed themselves of this right to the extent of 1,824 shares.

Development Policy.

Development work is still being pushed ahead as fast as the available native labour force will permit, with a view, as you know, to an increase in the capacity of the

mill as soon as this is justified. During the half-year just ended 9,535 feet have been developed, of which 6,405 feet were sampled and averaged 7.2 dwts. over a reef channel width of 33 inches.

The sinking of the incline shafts into the southern area of the property was stopped on 30th June as these had reached a sufficient depth to enable connections to be made with the new vertical shaft. Work in connection with the latter shaft was commenced on March 24 last, and is making satisfactory progress. As far as can be foreseen, the capital raised by the recent share issue will be fully sufficient to sink and equip this shaft. There will also be funds available for deepening the No. 2 vertical shaft and making alterations at that shaft, having for their object the more expeditious handling of men at this point. The work I have briefly outlined will take about two years to complete.

Before passing from this company I might mention that the use of the cementation process, which was commenced in October, 1917, has brought about a material diminution in the quantity of water to be handled. The total quantity pumped and baled last year was 183 million gallons less than in 1917, and 413 gallons less than in the previous year.

Princess Estate.

This mine is gradually recovering from the effects of the Spanish influenza epidemic towards the end of last year, which caused a complete disorganisation of work and a serious depletion of the native labour force. The outbreak, unfortunately synchronised with the completion of the reconstruction of the hoisting arrangements at the No. 1 shaft, with the consequences that a return to the profit-earning stage—which it was anticipated would take place on the completion of that work—has been deferred. The disorganisation not only affected the tonnage and working costs but was also the chief cause of a serious drop in the yield. The grade has now returned to normal, having averaged during the last three months 26s. 5.2d. per ton milled, but the prevailing shortage of native labour has made it impossible to crush within 4,000 tons per month of the capacity of the plant, and, as a result, the standing charges have to be distributed over a smaller tonnage which, coupled with the war burdens, increases the working costs per ton milled to about 4s. above the pre-war level. The detailed results for the half-year are 119,000 tons crushed, from which an average yield of 25s. 4.68d. per ton has been obtained. With working costs averaging 28s. 1d. per ton milled, there has been a loss on working of £16,044, which, after allowing for sundry revenue and the

difference between the amount charged to working costs for development and the actual expenditure under this head is reduced to a net loss of £10,070. The loss on working, in addition to the capital expenditure, has more than absorbed the funds provided when the company was reconstructed in the early part of last year and your Corporation has made the company temporary advances bearing interest at the rate of 6½ per cent per annum. The total amount so advanced is at date £36,212.

The inadequate native labour supply has, of course, caused a curtailment of development work, but the values disclosed have, on the whole, been satisfactory.

Mexico.

The tale we have to tell of our Mexican interests is much the same as in recent years. The La Fe Company is still prevented from producing by the state of affairs in the Republic, and, though the San Francisco Mines of Mexico recommenced work last year, it has been hampered by frequent interruptions and shut-down due to the same cause and has had no opportunity of showing what it could do were conditions stable. When the wave of unrest which has been fostered by the great war has expended itself, we can hope that work will be resumed at La Fe and that the other property mentioned will be able to show its full capabilities.

In the report we call attention to the fact that our Mexican interests are in a large degree dependent upon silver, and the price of that metal has recovered to something more approaching the quotation at which it stood up to 1873 than the 2s. per ounce or thereabouts to which it had sunk before the war. In view of the action of the United States Government last year, prices are likely to rule considerably above the minimum of 1 dollar per fine ounce. Therefore I think you will see that the fact that we have hitherto been unable to produce at La Fe has been a blessing in disguise, and though we have certainly not been speculating in any rise in silver, the fact that production has not been possible hitherto has obviously been of considerable benefit to us.

On the virtual termination of the great war the depletion of our staffs has this year come to an end, and the directors, while mourning the loss of those who have made the supreme sacrifice, are glad to welcome back a large proportion of the employees who joined the forces. I have to express the Board's appreciation of the services rendered by the various members of the management and staff. I now beg to move "That the directors' report and accounts for the financial year of the company ended on December 31st, 1918, be and they are hereby received and adopted."

The report and accounts were adopted. Sir Carl Meyer, retiring director, was re-elected. Messrs. Price, Waterhouse and Co., and Messrs. F. W. Diamond and English were reappointed auditors.

Shamva Mines.

The following is the quarterly report of Shamva Mines, Ltd., to March 31, 1919:—Tons crushed, 147,368; ounces fine gold won, 9,682; tons cyanided, 147,657; ounces fine gold won, 15,297; total yield fine gold (ounces), 24,979; value, £106,165; working costs, £71,017; estimated working profit, £35,118; placed to gold reserve during quarter, nil; gold reserve at end of March, 1919, £11,600; total ore reserves at March 31, 1919, 1,993,000 tons, value 4.3 dwts. Development work, on account of shortage of native labour,

is still curtailed, and the ore reserves, which now stand at 1,993,000 tons, of an average value of 4.3 dwts., show a loss of approximately 30,000 tons on the quarter's workings. With a somewhat improved labour supply and the generally favourable indications shown by recent development this loss should be made up during the June quarter. An additional length of 90 ft. has been added to the proved strike on the south parallel body. Result of development work now being carried out on the Cymric Hill have so far been encouraging, and development work on the furthest east extension continues to open up profitable ore.

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WITH WHICH IS INCORPORATED

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Notes and News.

Free Market for Gold.

As we anticipated in our last issue, consequent on the conclusion of peace, the arrangement by which the Bank of England purchased the Transvaal gold output, taking delivery in South Africa, has by agreement terminated and a new arrangement entered into. Under that new arrangement all gold, with the exception of such small quantity as may be required for local currency requirements, will be shipped to England by the producers, consigned to the Bank of England; but it will be sold by the gold producers' agents on their behalf in the best available market. Recently, some 50,000 ounces of gold were released by the Bank of England for the purpose of a test or trial sale, and realised through the agents of the gold producers on the latter's behalf 85s. 6d. per standard ounce as compared with 77s. 9d. This price, of course, is no indication of the price which will be obtainable on the average for the whole output, as it is merely a price obtainable in respect of some £200,000 worth of gold, as compared with some £35,000,000. It is hoped, however, that the free market in gold ensured under the new arrangement will in any case be advantageous to the industry. The arrangement will affect all gold deposited with the local banks on and after July 25, 1919. It is too early yet to attempt to gauge the effect of a free market for its product on the industry.

Durban Deep.

On June 25 it was notified that haulage in No. 1 shaft of the Durban Roodepoort Deep had been suspended in order to allow necessary repairs to be effected. This work has been completed, and hoisting was recommenced on July 25.

The American Exchange.

According to last week's telegrams, the rate of the American exchange on London on July 17 touched the extraordinarily low figure of 4 dollars 30 cents to the £. This means very nearly a ten per cent. depreciation in the Bank of England note in America, and is, probably, the lowest point that has been touched in the history of British American commerce. The exchange rate is therefore to-day 56 cents below par.

Douglas Alluvial Fields.

In view of the many diamond rushes which have taken place lately consequent upon the high price of diamonds, it is interesting to note that the Douglas alluvial fields, in which district Mr. A. W. Weatherby is interested, produced during the twelve months ended 30th June last nearly £10,000 worth of rough diamonds, averaging £9 to £9 10s. per carat. The number of diggers working there during the above period were 25, and they had 50 boys between them.

Victoria Falls and Transvaal Power.

The directors of the Victoria Falls and Transvaal Power Company have declared the following dividends: On the preference shares, a final dividend of 1 per cent., less tax, making 10 per cent. for the year 1918, also a dividend of 3 per cent., less tax, on account of the year ending December 31, 1919. On the ordinary shares a dividend of 5 per cent., less tax, in respect of 1918. The above dividends are payable July 8. The distribution a year ago was the same.

An Exhibition of Reefs and Stratigraphy.

A very complete series of specimens of Rand reefs has been on exhibit during the past week in the offices of Mr. W. E. Bloch. The specimens have been viewed by a large number of people, and the whole collection has now been shipped to England. The specimens comprise "Molyneux," "Nigel," "Van Ryn," Main and Kimberley Reefs, including Buckshot and Carbon leaders, and Mr. Bloch has issued a brief but interesting typewritten description of the various exhibits.

South African Coal.

According to the cables, the *Financial News* draws attention to the importance of the coal industry of South Africa, which, it says, "the public on this side has not seemed to grasp." The paper refers to the efforts of the *South African Mining Journal* in this connection, and concludes that South Africa's export trade "is a direct menace to our own coal trade, for not only is the eastern market to her hand, but the Union will endeavour to capture business with the Argentine and other South American Republics, not to mention the possibility of shipping to this country."

* * * *

Zaaiplaats Tin.

There are reasons for believing that the position at the Zaaiplaats Tin Mine is improving. The loss of values in No. 13 pipe is now considered to be only temporary and it is reported that the face is showing improvement. Mr. Gilbertson, the manager, who has been away on leave, has returned to the property, and in view of his intimate knowledge of the mine it is considered probable that a better outlook is in view for the company. These facts, in conjunction with the improvement in the price of tin, all point to an improvement in the affairs of the company in the near future.

* * * *

Flotation Process: Latest Legal Decision.

The decision of the Supreme Court of the United States of America in the recent action between Minerals Separation North American Corporation and the Butte and Superior Mining Company establishes the validity of the corporation's patent and gives it a process monopoly for the use of all fractions of oil below 1 per cent. with any form of agitation. It has been established that the Froth Flotation process does not require anything approaching 1 per cent. of oil, which is equivalent to 20 lbs. per short ton of ore treated, to obtain the best results, and it is stated to be more economical to pay reasonable process royalties than to use oil in excess of the patent claims. Minerals Separation North American Corporation is to be congratulated upon having its claims finally upheld by this judgment.

* * * *

Brakpan and Springs Development Charges.

The following cable is being dispatched to the Brakpan Mines Company's London office for publication: "Acting on the recommendation of the consulting engineer, the board has decided to temporarily increase the fixed charge for development from 3s. 6d. to 5s. per ton milled, with effect from 1st July. The effect of this increased charge will be reflected in the declared monthly profit." The following cable is being dispatched to the Springs Mines London office for publication: "Acting on the recommendations contained in the consulting engineer's report, circulated to shareholders on the 13th May last, and in view of the active development programme now being pursued, the board has decided to temporarily increase the fixed charge for development from 2s. 6d. to 5s. per ton milled, with effect from 1st July. Naturally this increased charge will adversely affect the declared monthly profits. Results for the month to date indicate a lower yield, further accentuating the decrease in the declared profit for this month."

* * * *

Imperial Mineral Resources Bureau.

The Governors of the Imperial Mineral Resources Bureau have now received their Charter of Incorporation, and are busily engaged in putting into effect their scheme of organisation. Correspondence has been entered into between the Bureau and the Overseas Governments of the Empire, with a view to obtaining at an early date all possible information affecting the mineral and metal industries of the countries concerned. In addition, certain statistical information on this subject from foreign countries is being obtained through the Foreign Office. The Governors look forward, when the information is available, to issuing from time to time various statistical and other publications which will be of the greatest service to those engaged in the mineral and metal industries, and it will be one of the chief aims of the

Bureau to issue this information as soon as it is available. In order that the Bureau may be able to successfully discharge its functions, and issue information of an up-to-date character, the Governors are seeking the co-operation and assistance of the various Government Departments, scientific institutions, societies and other bodies with which the Bureau hopes to be associated.

* * * *

South-West Africa Co.

The report of the South-West Africa Company for the year ended 31st December, 1918, states that the result is a profit of £5,793. The amount carried forward was £88,841. As in the preceding years, a sum equal to the amount of interest received or receivable in Germany on investments there and on bankers' balances in Germany accrued during 1918 has been placed to reserve. No provision has been made for depreciation on investments. In accordance with the views of the Board of Trade operations in South-West Africa have been restricted to what is necessary for maintaining the company's establishment as a going concern, and prospecting work remains suspended pending satisfactory arrangements to be effected in conformity with the new economic and political conditions in South-West Africa. The operations of the Otavi Exploring Syndicate on the copper ore deposits at Bobos and Groot Otavi, and the investigation work at Nosib, were seriously hampered by the influenza epidemic, which has now abated. A quantity of about 200 tons of high-grade copper ore is now being shipped to England.

* * * *

The Cost of Phthisis Legislation and Native Recruiting.

Giving evidence before the Low-Grade Mines Commission, Mr. Donald McPhail, actuary to the Miners' Phthisis Board, estimated the total requirements under the new Phthisis Act at four millions for the first five years, and that took into account only cash amounts to be levied. It did not represent the total liability on mines through awards, which would add another million and a half. Under the existing Act the liability for the next five years would have been £1,300,000. The cost to the mines had been increased by four times. The W.N.L.A. gave detailed evidence in regard to the recruiting of natives, and the beneficial effect of Dr. Lister's vaccine in combatting pneumonia. Subject to the consent of the Portuguese Government Association, they could obtain and maintain a force of 30,000 tropical natives on the mines without seriously interfering with the native labour requirements of the tropical areas themselves. The natives returning from Johannesburg showed improved physique compared with the natives in the territories.

* * * *

Middlevlei Estate.

Presiding this week at the ordinary general meeting of the shareholders of the Middlevlei Estate and Gold Mining Co., Ltd., Lieut.-Colonel F. Leslie Brown, D.S.O., said that the company continued to husband its cash, as so far no developments had arisen to justify carrying out further prospecting. In recent issues, however, of the *South African Mining Journal*, references have been made to the prospect of a revival of the Western Rand Estates properties which lie to the south and south-west of the company's property. Though nothing officially had as yet been announced, it was stated in the Press that a powerful American Corporation had undertaken to provide ample funds for the development of that company's vast area, that within the next year or two the Gembokfontein shaft would be put down to the reef horizon, that other shafts would be sunk on the properties of the Western Rand Estates, and that an ambitious policy of exploitation would be adopted. The Gembokfontein property adjoined the company's farm, and as the prospects of the company's property depended on the value of the extension of the Randfontein series of reef through it, it was obvious that any developments such as those foreshadowed would have an important bearing on the future, and would, therefore, be watched with close attention and interest by the directors. The report and accounts were adopted. Messrs. D. Christopherson, C.B.E., W. S. Smits and Lieut.-Colonel F. Leslie Brown, retiring directors, were re-elected.

TOPICS OF THE WEEK.

PLAIN FACTS ABOUT THE INDUSTRY.

THE evidence led before the Low-Grade Mines Commission this week was of a very mixed description. Col. Creswell trotted out all his familiar pet theories regarding the industry, showing that during the years that have elapsed since the issue of his own precious report he has learned nothing—and forgotten nothing. At the end of last week and the beginning of this, Mr. Errol Hay, the technical adviser to the General Mining Group, gave very clear and forcible evidence regarding the plight of the seventeen low-grade mines in general and of the mines of his group in particular. Mr. Hay has plainly taken great pains to present his facts to the Commission, and through it to the public, in such a manner that they could not fail to impress. His evidence-in-chief runs to 57 large pages of closely-printed matter, and his cross-examination thereon took up the best part of two whole days. No summary can hope to do justice to this accumulation of data, and we must content ourselves here with drawing attention to the very serious and arresting conclusions at which he arrived. "I am of opinion," said Mr. Hay, "that, in the event of any large number of the low-grade mines closing down, the Government would be unable to take steps materially to alleviate the position, the country would become morally and financially bankrupt, and a very large section of the population reduced to starvation. This is a serious responsibility for any Government, and it can be avoided in one way only—by keeping the mines at work. I have already said that it is hopeless to expect further financial assistance from the shareholders or from the Corporation. They, perhaps, have less to lose than any section of the community, since, for some time, they have received no return on their investment. The Government, on the other hand, is deriving a vast revenue from the mines, and would be affected infinitely more than either the shareholders or the Corporation if they were to close down. For this reason alone, and apart from any other consideration, they should provide the means of keeping them going." Mr. Hay's view is that the most obvious steps which could be taken by the Government to obviate closing down the low-grade mines are: (1) Remission of the Government share of claim licences; (2) remission of native pass fees; (3) cancellation of Municipal assessment rates; (4) reduction of railage and harbour charges to bare cost; (5) establishment of a refinery and mint; (6) re-opening of recruiting north of latitude 22 deg. south; (7) removal of colour bar; (8) grants of subsidies. These he elaborated in detail, and on the subject of the colour bar he had something of special importance to say. The most cogent reason for the removal of that bar is, he declared, "the growing unrest and discontent which exists among the natives at the present time." In this connection, Mr. Hay quoted the words of Mr. J. J. Boyes, the Commissioner appointed by the Government to investigate the causes of the local disturbances. Mr. Boyes said: "It appears to me that the bedrock of the trouble and the native unrest in Johannesburg is the colour bar question, the opposition to the existing pass laws, and their administration is, in my opinion, only an incident and a phase of that great, difficult and complicated question. . . . It does seem that it would be dangerous to allow this important question to drift; feeling amongst a large section of the natives seems to be very intense; they are in an excited state of mind, and seem determined to resist the carrying out of the existing pass laws." "These words, coming from a Government Commissioner's report," said Mr. Hay, "are very illuminating. They make one realise, more than ever, that it may not be always for the white people to decide whether they will or will not remove the colour bar, but that a new and powerful element is gradually rising, which is going to settle the question for itself. For what length of time we can continue on present lines, cannot be foreseen. It may be for a few more years, or, again, the change may be forced upon us sooner than we anticipate. That it is bound to come sooner or later is certain, and it is all to the advantage of the white community to give way a little now of their own free will, rather than risk having to yield a great deal

more in the future as the result of pressure. . . . Finally, I am of opinion that, sooner or later, the colour bar will be removed, if not by ourselves, then as the result of action by the natives, and that when this comes about, the effect on white employees will be almost negligible, and certainly of unimportance in comparison with the position which would be created if the low-grade mines were to be closed down." This very downright and unequivocal statement of the case is, we believe, thoroughly justified in every particular. Unfortunately we cannot in this issue quote more fully from the array of supporting facts adduced by Mr. Hay, but we hope to do so in future issues. Meanwhile we commend Mr. Hay's considered and emphatic warning to the attention of the Government and of the country.

The Goldfields' Change.

At a meeting of the shareholders of the Consolidated Gold Fields of South Africa, Ltd., held at the Cannon Street Hotel, London, last Thursday, a resolution was passed authorising the sale of the assets of the company to a new company. The directors recommend the shareholders to agree to this course, as they are constantly refusing offers of remunerative business, which under the Memorandum of Association of the present company they are debarred from entering into owing to the facts that its objects, as set out in its memorandum are unusually limited, and do not at the present time afford adequate scope for the remunerative employment of the company's capital, and the directors are advised that an application to the Court to extend the company's objects would not afford the additional powers which it is desirable to have. The only alternative therefore is forming a new company with extended power and to sell the assets of the present company to such new company. Apart from enabling the directors to engage in business not within the power of the company's memorandum, no alteration whatever will be made either as regards the rights of the respective classes of shareholders or in any other respect, and the new company's articles of association will be more up to date.

* * * *

Victory Diamonds.

A new diamond concern, styled the Victory Diamonds, Ltd., has been formed to work certain diamondiferous deposits on the farm Rietfontein in the Kuruman district. The property has been inspected by Mr. D. J. Wilson, who, in the course of his report, states: The gravel or lime cemented diamond-bearing gravel occupies a channel having a N.W. to S.E. trend 300 ft. to 500 ft. wide and about 1½ miles long with a depth of from 15 ft. to 25 ft. average. But some shafts have been put down over 50 ft. in depth, others have depths running from 30 ft. to 40 ft. There is a large tract of the farm which has had no work done on it, and this gravel would be worth careful investigation, as a neighbouring farm is commonly supposed to carry a mine, but has been shut down by interested parties. The diamonds have been found from the surface to bed rock, but the richest deposit is about 14 ft. down and varies in thickness from 1 ft. to 12 ft. It is composed of well-rounded pebbles and pieces of cornelian set in a matrix of white lime stone. Pebbles of agate chert jasper are also present. The concentrate contains grains of ilmenite, showing very little wear, which confirms the suggestion of a near pipe or fissure of Kimberlite. In the past working of the conglomerate, considerable difficulty was experienced in treating it, as it requires to be blasted out and then broken up by hammers or other methods. This problem of treatment has been solved by experimental work which makes your proposition a very different matter from the methods of working previously carried out on this property. Three complete gears, with necessary tools, etc., have already been purchased and should be running on the property in about a month. The capacity of each gear is about 2,500 loads per month. According to information received, during 1911 the registered finds on this farm amounted to 2,897 carats, valued at over £10,000; to-day the same quality of diamonds would average £10 per carat at a very conservative estimate, or roughly £29,000. Further, according to information received, an average of 25 carats per 100 loads was taken out, and in my opinion this is correct.

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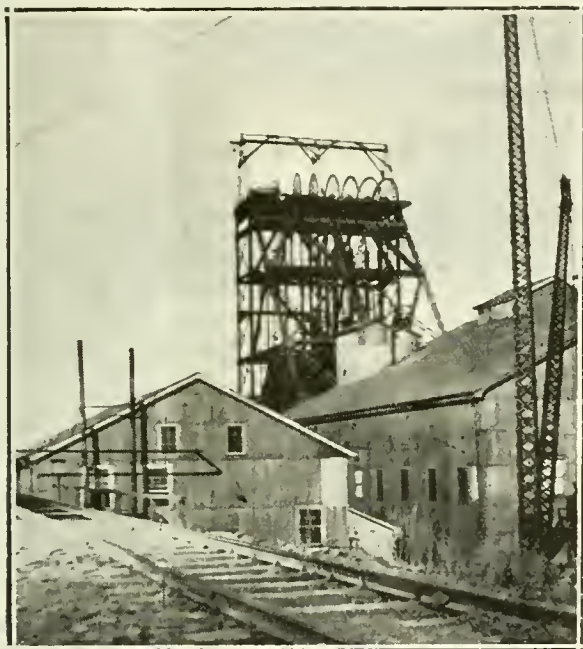
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THE DISABILITIES OF OUR DEEPEST MINES.

Mr. Whitehouse's Valuable Evidence—Working Low Grade Ore Below Sea Level—Irksome Regulations and Labour Inefficiency—The Problem of Our Deeper Deeps—Some Striking Facts and Figures.

JUST after the Boer War Mr. Hans C. Behr, at that time consulting mechanical engineer to the Consolidated Gold Fields of South Africa, read his "Magnum Opus" on the subject of winding from great depths. At that time the Rand was commencing on its deeper level projects. The heyday of outcrop propositions had been reached and the success encountered in the preliminary development of the first row deeps had encouraged the controlling houses to proceed with the development of the propositions which had been taken up to the south right along the Rand. Maintenance of gold values, earth temperatures and ventilation were not considered to present any material obstacles to working at a depth of a mile or more from surface. The great problem was the haulage of ore from such depths and the down and up trips of men, tools and stores. Mr. Behr's noteworthy paper, which provoked a tremendous amount of discussion from Messrs. H. H. Webb, Hennen

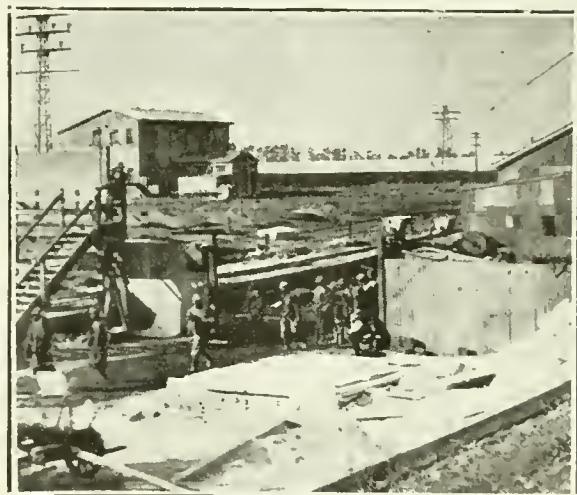
At the bottom of the incline the workings are more than a mile deep. In giving evidence Mr. Whitehouse stated: In January, 1914, special arrangements were made with the Mines Department whereby some relief from the stipulations of Regulation 158 (12a) was afforded. This regulation prevents coloured labourers "proceeding to their working place until they have been taken charge of by the ganger or miner to whose gang they belong," the object of this regulation being to have the working place examined by the ganger before the natives, some of whom may be inexperienced, enter it. In place of this precaution, a night examining shift was instituted. Examiners with their necessary native assistants examined the stopes during the night and removed ground of a dangerous nature. Where condi-



THE DEEPEST GOLD MINING WORKINGS IN THE WORLD:
THE TURF SHAFT OF THE VILLAGE DEEP.



A VIEW OF THE TURF SHAFT AND NATIVE COMPOUND.



TURF MINES: NATIVES COMING OFF SHIFT AFTER
LABOURING BELOW SEA LEVEL.

Jennings, A. M. Robeson, and other technical giants of those days, went to show that by the adoption of stage hoisting and the most modern types of winders there were, no insurmountable obstacles to hoisting from the deeper levels of the Witwatersrand, and all that has happened since has proved the accuracy of Mr. Behr's estimates amplified and supported by the bulk of the Rand's technical experts. But it must be admitted that whilst the mechanical factor has given no cause for qualms the economic situation has not changed for the better. The values in the deeper levels have not come up to expectations, costs have been steadily rising, labour's demands have increased, and unfortunately efficiency has not kept pace with these demands for more pay and less work. Efficiency has, in fact, declined and the problems which confront the mines of the Rand as a whole and the deeper mines in particular are of the economic and social type and not of the mechanical kind. Mr. James Whitehouse, manager of the Village Deep, gave most valuable evidence on these matters before the Low-Grade Mines Commission a few days ago, and he alluded particularly to the difficulties under which the Village Deep was operating in regard to the depth of working and the time occupied in getting the shifts to and from their work. The Turf Mines shaft, which contributes the bulk of the company's ore, is the deepest gold mining shaft in the world to-day,

tions could not be made satisfactory, someone was left to give warning to the day shift, and a red lamp was hung at the entrance to the working place. On returning to the surface, the examiners made a report which was inspected by the day shift before going down. With this arrangement, the natives on day shift, on reaching their working places, were able to commence work and did not have to wait at some point in the drive until the arrival of the ganger, which they would have to do under Regulation 158 (12a). This special arrangement continued in operation until November, 1917, when the special permission which had been granted for it was withdrawn. Drawing attention to the great depth at which mining operations are taking place, the lowest of which are below sea level, Mr. Whitehouse said that in consequence underground employees have to travel great distances and have to tranship from shaft to shaft before reaching their working places. The effect of this is that considerable time is taken for the lowering of labour, and in order that the native labour force can be lowered before the arrival of the white man it is necessary that they commence to descend at 4.30 a.m. Similarly, a

considerable time is taken by white underground employees to reach their working places, and as they descend at seven o'clock, it will be obvious that the native labourers have to wait a long time underground for the arrival of their gangers. Towards the end of the day shift preparation for blasting operations has to be made, and it is necessary that all machines and gear should be moved to a safe place and an allowance for the time to do this has to be made by the miner, after which his time is spent in charging the holes drilled. It will be clear that during this latter period no drilling is possible, and the natives are sent away, thus still further reducing the time available for them for drilling. In consequence of the conditions described above, it will be seen that although natives may be underground for a considerable period each day, the actual time available for them in which to work is very short. Under the special arrangement referred to these disabilities were overcome. The natives on reaching their working place were able to rig up their machines and prepare for the arrival of the ganger, who will have told them the day before what preparations to make. After the arrival of the ganger no time was lost in drilling over and the machine boy's work was accomplished early in the day and he was able to return to the surface at an early hour. The effect of the stoppage of this system was seen in a very serious drop in the machinery efficiency on this mine. This work has been particularly handicapped by the departure of many of the better machine boys, who on finding that they were not

allowed to do anything before the arrival of the ganger, for whom they had to wait a long time, and their working shift was now so short that their earning capacity was considerably reduced, left for their homes. From my experience of the system as described, said the witness, I am of opinion that it is highly desirable that the regulation should be modified to allow of its adoption, both from the point of view of efficiency and of its effect on the native labourer. A deep level mine, such as the one with which these remarks deal, is very inelastic, that is that a reduction in working expenditure does not correspond with a reduced tonnage. The heavy burdens which are caused by pumping from great depths, the support of workings which is an ever-increasing expense, together with the duplication of winding arrangements entail a heavy monthly expenditure which does not vary in relation to the tonnage crushed.

It will be clear from Mr. Whitehouse's valuable statement that although the mechanical and engineering difficulties are by no means insurmountable in an ultra deep mine like the Village Deep, the existing labour inefficiency and irksome regulations impose a well-nigh crushing burden upon deeper level mining. The future of the Rand depends, however, in very large degree upon results at great depths with a low-grade product, and it is most earnestly to be hoped that Mr. Whitehouse's clear exposition of present-day difficulties in very deep mines will receive the fullest consideration by the Commission and by the Government to which the Commission will report.

Box Respirator Unsafe for Use in Mines.

Many miners who have served in the war have, on their return to their normal avocations, attempted to use gas masks for rescue purposes underground. The makers of certain instruments, also, have recommended their apparatus for use in mines. The Mines Rescue Apparatus Research Committee has, therefore, found it necessary to issue a word of warning to the effect that such apparatus as the army respirator and the Eeds helmet are not safe for use in mines. The main risk when attacking a mine fire, or in penetrating workings after an explosion, is attributable to carbon monoxide. A second risk, which is seldom of importance at the surface, but which cannot be disregarded in mines, is that an atmosphere may be entered which contains an insufficient amount of oxygen to support life. Neither the army respirator nor the Eeds appliance give the least security against either of these dangers, and this type of appliance cannot be looked upon as a substitute for self-contained breathing apparatus. This warning is all the more necessary as both the army respirator and the Eeds helmet will stop smoke, and for that reason they would give a person ignorant of the real danger a feeling of security when entering smoky air, and thus add to the probability of his being overcome.—*Mining Magazine*.

The Right Honourable Lord Weir of Eastwood has promised to open the Shipping, Engineering and Machinery Exhibition at Olympia on September 25th next. This Exhibition, of which Sir Owen Philipps, G.C.M.G., M.P., is Hon. President, Sir Archibald Denny, Bart., Chairman of the Committee of Experts, and Mr. F. W. Bridges Secretary and Organising Manager, and which was to have been held in the autumn of 1914, but, in common with other important events, had to be postponed on account of the war, will afford the general public an opportunity of becoming acquainted with the luxury, comfort and ease of present-day sea travel. The interval which has since elapsed has, moreover, afforded British Engineers an opportunity of introducing vast improvements in connection with Marine and General Engineering, with the result that Olympia will be full to overflowing with machinery and appliances of intense interest to all concerned with the Shipping, Shipbuilding and Engineering Industry, and the exclusion of everything of enemy origin will enable the British public to see how absolutely independent we can be of anything produced in enemy countries, at any rate as regards this particular industry. The Exhibition is to remain open for three weeks.

Gaika Developments.

The Gaika Company intimates that the Rubble Reef at the No. 3 level has again improved, and the last 12 ft. have been extremely satisfactory. It is further intimated that the average value of the high-grade section so far opened up may be taken as 1 oz. 13 dwts. over an average width of 37 ins. for a distance of 80 ft., while the reef in the face still looks particularly good.

Messrs. John Birch and Co., Ltd., Export Engineers of London, announce that they have undertaken the Overseas Agency of William Beardmore and Co., Ltd., the well-known Glasgow engineering firm. The Beardmore workshops are rapidly being converted from war to peace production of metals and machinery for distribution throughout the world. The Birch organisation, already far-reaching, is being further extended to meet these new requirements. The announcement of the association of the Beardmore-Birch interests marks a significant step in connection with the development of British trade overseas. The firm of William Beardmore and Co., Ltd., which is now turning from the manufacture of armaments and other requirements of the fighting services, with which it has been concerned in recent years, to the production of metals and machinery for commerce, has long held a pre-eminent position, the output at Parkhead and Dalmuir in 1918 reaching an almost fabulous figure, while, as is well known, Messrs. Birch have devoted themselves to the export trade and have established a strong connection not only in South Africa, but all over the world. The latter's organisation ensures that months, possibly years, of valuable time will be saved in getting Messrs. Beardmore's productions on the Overseas markets, since the intermediary organisation provided obviates the necessity which would otherwise face the manufacturer desiring to cultivate export trade of establishing such organisations in all markets, and brings him into immediate touch with these markets. In view of these fresh requirements, the capital of Messrs. John Birch & Co. has been largely increased.

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MODDER EAST DEVELOPMENTS.

A Substantial Ore Reserve of High Value—Satisfactory Reef Disclosures—Some Excellent Assays—The Company's Finances.

LOCAL interest in the Far East Rand is largely focussed on the Modder East property at the present, and although a further very substantial amount of development work will have to be carried out on the property before crushing operations can be contemplated the exploitation of the Modder East Company's large claim area to date undoubtedly points to the existence of a mine of rather more than average payability. At the end of June the ore reserves amounted to 850,000 tons of an estimated average value of 8 dwts. over a stoping width of 55 ins., and we understand that since that date a further large tonnage of excellent value has been exposed. In the quarterly report issued from the head office and dated July 24, attention is directed to the following features: (1) No. 1 main incline has continued to disclose ore of attractive character, the result for the quarter being 150 feet sampled averaging 38.6 dwts. over 22 inches of reef, or 849 inch-dwts. (2) The 21st level drive south continued in high-grade ore, viz., 59 dwts. over 24 inches, or 1,416 inch-dwts., for 150 feet sampled. (3) The good indications on the 22nd level, to which reference was made last quarter, have been borne out by subsequent development. (4) The work so far done on the 18th level horizon west of the large dyke has disclosed 48.3 dwts. over 14 inches of reef, or 676 inch-dwts., for 110 feet of miscellaneous development.

No. 2 SHAFT.

This shaft was sunk a further 172 feet to a total depth of 1,218 feet. The reef was intersected at 1,160 feet, of an average value of 6.7 dwts. over 30 inches. A station was cut at what will be known as the 11th level, and sinking continued to the depth shown above for the purpose of providing sump room. In the course of station cutting reef was disclosed for a distance of 60 feet, viz., 34 inches averaging 5 dwts. in value. The necessary walling in this shaft is completed, and during the current month the sinking equipment will be replaced by rope guides and cages and development resumed.

No. 3 SHAFT.

Considerable progress was made with the extension of the 8th level. The northern drive made 479 feet of progress, but the formation was much broken, and the reef disclosed from time to time found to be unpayable. The southern drive advanced 458 feet, disclosing 299 inch-dwts. for 415 feet sampled. Towards the end of the quarter, after passing through a fault, values were considerably above the average. A start has been made with the incline connection to No. 2 shaft.

The ore reserve, re-estimated and valued at the 30th June, consists of 850,000 tons of an estimated average value of 8 dwts. over a stoping width of 55 inches. There has been very little construction work done during the quarter. The white labour strength averaged 177 men, and the average number of natives employed was 1,177. In a circular dated 15th May, 1919, shareholders were advised of the resolution passed at an extraordinary general meeting of the company held on that date authorising the directors to borrow from time to time a sum not exceeding £500,000 by an issue of first mortgage debentures, and to increase the capital of the company as required and without further reference to shareholders by the creation of 500,000 shares of the resolution passed at an extraordinary general meeting and satisfying any conversions of the aforementioned debentures into shares of the company and to issue such shares as and when required. In the abovementioned circular, shareholders were advised that in terms of the resolutions above referred to, £200,000 debentures were offered for subscription, and that applications in connection therewith would close on the 21st June, 1919. Debentures to the extent of £159,055 were subscribed for, leaving a balance of £10,945 to be taken up by the guarantors of the issue. It is esti-

mated that the present cash resources of the company will be sufficient to meet the cost of current development operations until approximately the middle of August, 1919, and as the necessary funds for future work have not been provided by the exercise of options held over shares of this company, it has become necessary to act in accordance with the authority given to directors by shareholders at the extraordinary general meeting held on the 15th May, 1919. Steps will therefore be taken shortly to issue, at par, further debentures to the extent of £300,000. Of the quarter's development footage the payable portion of 1,160 feet, or 55 per cent., averaged 24 dwts. over 24 inches, or 576 inch-dwts., whilst of the development to date the payable portion of 5,692 feet, or 47 per cent., has averaged 26.8 dwts. over 19 inches, or 509 inch-dwts. The total expenditure during the quarter amounted to £75,112, or £25,000 per month, and in view of the excellent results secured this money may be regarded as having been well spent. We understand that development is being pushed on with all possible speed and that the outlook in all sections of the mine is most favourable.

Rhodesia's Industrial Future.

Speaking at a company meeting in London the other day, Mr. J. E. H. Lomas said:

It may interest you to hear that I have just returned from a six months' trip to South Africa. I may say, in brief, that I was much impressed with the general position and the great prospects immediately in view. But, large as the progress has been during the last ten or fifteen years—and it has been magnificent—I think the developments of the next five or six years will eclipse the longer period. The impression was forced upon me, as I travelled through the country, that South Africa is on the very threshold of a great industrial advance. I use the word industrial in its widest sense, meaning it to embrace agriculture, cattle raising, fruit culture, wine, tobacco, cotton—which promises to be a feature—as well as all the minerals and metals. Take, as an instance, Rhodesia, in which country you are closely interested. While it may be admitted that as a goldfield it has not been an unqualified success, the position with regard to its base metals is exceptional. It possesses at Selukwe the largest deposit of chrome ore of high value so far discovered in the world—an enormous deposit, and so favourably situated as regards mining that the costs of putting the ore on rail will prevent any other deposit so far discovered in Africa from competing with it. The export of chrome ore from Rhodesia already successfully competes in the markets of America, Europe and Asia. At Shabanie the asbestos deposits are extensive and valuable. Already there are large producers of first-class fibre, treated and graded so well on the spot that the demand for their brands or grades is now world-wide. The life of one mine I visited is already assured for about twenty years, based upon its present high rate of production. In the Victoria district the asbestos deposits are also large and valuable and the output eagerly sought after. Close to Bulawayo an extensive body of limestone is producing cement of excellent quality, the demand for which is so large that the doubling of the capacity of the plant is in view. Further north, at the Wankie Colliery, they are turning out 27,000 tons of coal and 6,500 tons of coke per month, and are increasing their capacity. It is a really good coal and first-class coke, the coal being turned out at the cheap price of about 10s. per ton on rail—a perfect boon to the country—and the supply can last 100 years. Proceed a further 300 miles across the Zambesi River and at Rhodesia Broken Hill you will find the smelters running night and day, and every day, without ceasing, outputting some 1,100 tons of lead per month. The deposits of zinc and lead are also of very large extent. The zinc is not yet being extracted, but I am credibly informed that the complete plant when equipped will cost a large sum of money, and you can doubtless appreciate the beneficial effect upon the district such a large industry will have upon the value of land and property. In the Gatooma district it is now claimed that enormous deposits of scheelite have been found, so large that they may have an influence on future prices for that commodity. With regard to cattle and land, I spent some days, through the courtesy of the British South Africa Company, upon the Rhodesia ranch. Here they have over 40,000 head of cattle; that is the capacity of this area, so there will now be a surplus in future years. Some magnificent beasts are herded here—Hereford pedigree bulls and heifers, Africander, etc. The grading up is progressing rapidly and the cattle were fat and in good condition. Another ranch in the Tul district, Nuanetsi, has also about 40,000 head of cattle. Liebig's ranch adjoining is said to have nearly 40,000 head. Willoughby's claim to have 20,000 head. Mr. Meikle, a trader, is said to be interested in about 100,000 head. Numbers of companies and individuals have 2,000, 1,000 and lesser numbers. All are working to improve their grades of beast and for increase of stock, and not for immediate cash profit.



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TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Distributions for First Half of Current Year—A Valuable Synopsis of Returns—Crushing and Profit & Loss Returns for Six Months—Ore Reserves and Dividends—An Interesting Table—Compiled from Chamber of Mines' Statements.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax, Miners' Phthisis Contributions, etc.

AURORA WEST

Capital: £106,353 (10s. shares).

Ore Reserves: 242,200 tons 5'6 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	12,000	10,985	18 4	23 8	*3,287	5 6	
February	11,700	11,885	20 4	25 5	*2,994	5 1	
March	15,000	15,504	20 8	21 5	*470	0 7	
April	13,800	13,877	20 1	23 3	*2,229	3 3	
May	11,800	16,732	22 6	22 5	45	0 1	
June	12,500	13,159	21 1	26 3	*3,323	5 1	

* Loss.

BANTJES CONSOLIDATED.

Capital: £502,306.

Ore Reserves: 85,000 tons 6'3 dwts. Crushing suspended.

BRAKPAN MINES.

Capital: £850,000; issued £791,100.

Ore Reserves: 2,718,000 tons 8'7 dwts. Dividends, 1918: 32½ p.c.
June, 1919: 12½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	42,000	86,241	41 0	25 11	30,874	14 8	
February	41,300	81,850	39 7	25 1	29,176	14 2	
March	51,500	95,103	36 10	24 7	30,724	11 11	
April	47,500	89,606	37 8	24 8	30,407	12 10	
May	48,800	120,287	49 3	24 10	30,503	12 6	
June	45,500	92,142	40 6	25 6	30,105	13 3	

CITY DEEP.

Capital: £1,250,000.

Ore Reserves: 3,342,700 tons 9'6 dwts. Dividends, 1918: 27½ p.c.
June, 1919: 10 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	15,500	91,415	40 2	28 11	24,887	10 11	
February	10,000	78,825	39 5	30 5	17,510	8 9	
March	50,000	100,034	40 0	27 9	29,368	11 9	
April	48,500	98,322	40 7	28 0	29,199	12 0	
May	50,000	98,896	39 7	28 5	27,487	11 0	
June	48,000	94,453	39 4	28 4	26,405	11 0	

CITY AND SUBURBAN.

Capital: £1,360,000 (£4 shares).

Ore Reserves: 348,200 tons 7'8 dwts. Dividend, 1918: 17½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	15,579	28,765	36 11	39 9	*2,793	3 7	
February	13,947	24,437	34 9	40 10	*1,368	6 3	
March	16,159	25,474	29 1	38 2	*3,758	7 2	
April	17,343	28,765	32 8	35 6	*2,423	2 9	
May	18,270	32,410	35 6	35 0	76	0 1	
June	18,226	27,950	30 8	34 10	*1,096	4 6	

* Loss.

CONSOLIDATED LANGLAAGTE.

Capital: £950,000.

Ore Reserves: 2,103,000 tons 6'2 dwts. Dividends, 1918: 5 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	41,300	51,644	25 0	20 9	8,859	1 3	
February	41,000	49,414	23 11	19 9	8,870	4 4	
March	47,200	56,074	23 7	19 2	10,848	4 7	
April	45,000	55,547	24 6	19 10	10,839	4 10	
May	45,800	56,605	23 11	19 6	11,877	5 2	
June	43,200	54,382	25 0	19 8	11,780	5 5	

CONSOLIDATED MAIN REEF.

Capital: £1,247,602.

Ore Reserves: 1,425,870 tons 7'3 dwts. Dividends, 1918: 3½ p.c.
June, 1919: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	44,310	68,367	30 10	27 7	6,551	2 11	
February	41,610	67,199	31 10	28 9	6,417	3 1	
March	50,140	74,803	29 10	26 0	8,636	3 5	
April	47,300	75,185	31 11	28 1	7,753	3 3	
May	50,230	75,733	30 2	26 4	8,587	3 5	
June	47,000	72,985	31 1	27 3	8,050	3 5	

CROWN MINES.

Capital: £940,106 (10s. shares).

Ore Reserves: 8,298,100 tons 6'4 dwts. Dividends, 1918: 20 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	140,000	205,110	29 4	26 4	18,380	2 7	
February	124,000	183,948	29 6	27 5	12,970	2 1	
March	160,000	222,861	27 9	24 3	25,468	3 2	
April	158,000	219,786	27 10	23 5	32,107	4 1	
May	164,000	227,861	27 9	23 0	37,467	4 7	
June	168,000	234,993	27 11	22 3	44,538	5 4	

DURBAN ROODEPOORT DEEP.

Capital: £440,000.

Ore Reserves: 1,078,500 tons 6'5 dwts. Dividend, 1918: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	23,200	34,908	30 1	30 3	*531	0 5	
February	25,000	37,563	30 1	28 4	1,834	1 6	
March	27,700	40,795	29 5	27 2	2,698	1 11	
April	25,200	35,481	28 0	27 11	*156	0 1	
May	24,100	35,490	29 5	29 9	*561	0 6	
June	18,400	29,020	31 6	36 11	5,305	5 9	

* Loss.

EAST RAND PROPRIETARY MINES.

Capital: £2,445,897.

Ore Reserves: 2,268,000 tons 6'5 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	115,000	146,424	25 3	23 0	12,606	2 2	
February	103,500	134,458	26 0	24 0	8,734	1 8	
March	112,000	150,004	26 9	25 1	8,030	1 5	
April	110,000	139,814	25 5	23 4	10,020	1 10	
May	110,000	141,313	25 8	24 8	6,079	1 1	
June	111,000	147,018	26 6	24 8	8,535	1 6	

FERREIRA DEEP.

Capital: £980,000.

Ore Reserves: 932,400 tons 8'0 dwts. Dividends, 1918: 22½ p.c.
March, 1919: 7½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	37,240	62,021	32 4	24 10	13,639	7 4	
February	31,700	49,690	30 8	26 7	6,962	1 5	
March	37,000	60,505	31 6	25 7	10,289	5 7	
April	32,300	56,941	35 3	25 11	14,367	8 11	
May	33,600	52,455	31 3	24 7	12,738	7 7	
June	33,000	50,994	30 11	24 0	11,053	6 8	

GEDULD PROPRIETARY.

Capital: £970,000.

Ore Reserves: 2,510,000 tons 7'5 dwts. Dividends, 1918: 11½ p.c.
1919: Distribution of enemy shares.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	42,900	63,402	29 7	20 0	20,364	9 6	
February	39,500	60,046	30 5	19 10	19,456	9 10	
March	43,500	63,554	29 3	19 2	20,363	9 4	
April	42,000	63,113	30 1	19 6	20,896	9 11	
May	43,000	65,989	30 8	20 10	20,391	9 6	
June	43,800	65,640	29 3	20 3	20,723	9 6	

GELDENHUIS DEEP.

Capital: £585,753.

Ore Reserves: 1,549,600 tons 5'9 dwts. Dividends, 1918: 7½ p.c.
June, 1919: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	47,100	55,968	23 5	24 0	*949	0 5	
February	42,500	50,514	23 5	26 1	*5,489	2 7	
March	53,100	61,341	23 1	22 4	1,651	0 7	
April	47,500	54,447	22 11	24 6	*1,018	1 8	
May	49,500	58,368	23 7	22 10	1,137	0 6	
June	47,200	57,905	24 6	23 9	1,247	0 6	

* Loss.

GOVERNMENT AREAS (MODDER).

Capital: £1,400,000.

Ore Reserves: 9,445,000 tons 8.0 dwts. Dividends, 1918: 27½ p.c.
June, 1919: 17½ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	106,500	188,344	35 1	21 5	71,431	14 0
February	101,000	179,658	35 7	21 9	69,594	13 9
March	114,000	199,546	34 5	21 0	79,659	14 0
April	116,000	204,448	35 0	20 8	84,479	14 7
May	125,000	218,788	34 5	20 2	92,762	14 10
June	118,500	204,956	34 6	19 9	87,163	14 9

GLYNN'S LYDENBURG.

Capital: £170,000.

Dividends, 1918: 16¼ p.c. January, 1919: 2¼ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
1918. December	1,318	2,239	34 0	44 2	*726	11 0
1919. January	2,784	4,126	29 8	—	20	0 2
February	3,160	6,168	39 0	28 7	1,516	9 7
March	3,770	5,841	31 0	26 4	751	4 0
May	3,885	7,127	36 8	31 7	918	4 11
June	3,830	6,486	33 10	31 11	235	1 3

* Loss.

JUPITER.

Capital: £1,014,200.

Ore Reserves: 671,000 tons 5.98 dwts. Dividends, 1918: 1¼ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	26,400	27,908	21 2	21 1	*330	0 3
February	22,100	24,310	22 0	23 3	*1,702	1 6
March	24,400	26,761	21 11	23 1	*1,774	1 5
April	21,200	23,953	22 7	25 8	*3,590	3 5
May	23,600	24,348	20 7	23 5	*3,585	3 0
June	22,300	24,190	21 8	23 11	*2,766	2 6

* Loss.

KNIGHT CENTRAL.

Capital: £900,000.

Ore Reserves: 275,000 tons 6.9 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	17,900	27,377	30 7	29 5	996	1 1
February	20,000	28,957	26 8	27 8	*429	0 5
March	19,100	25,639	26 10	29 2	*2,495	2 7
April	20,000	30,367	29 7	29 3	706	0 8
May	22,500	26,565	23 7	30 0	*7,483	6 8
June	21,700	26,705	24 7	30 4	6,553	6 0

* Loss.

KNIGHTS DEEP

Capital: £743,526.

Ore Reserves: 1,671,000 tons 4.43 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	85,300	70,262	16 6	16 7	*464	0 1
February	77,600	68,312	17 7	17 8	1,014	0 3
March	88,200	76,175	17 3	16 11	608	0 2
April	82,900	71,451	17 3	17 3	*1,189	0 3
May	93,100	74,359	16 0	16 5	*3,180	0 8
June	95,000	77,496	16 1	15 4	1,611	0 4

* Loss.

(d) In addition, £1,448 taken from reserve.

LANGLAAGTE ESTATE.

Capital: £886,500.

Ore Reserves: 1,036,200 tons 6.9 dwts. Dividends, 1918: 12½ p.c.
June, 1919: 7½ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	45,170	55,654	24 3	18 10	13,051	5 9
February	38,160	48,917	25 8	20 1	10,506	5 6
March	42,000	55,131	26 3	20 6	12,005	5 9
April	40,000	52,332	25 10	21 2	10,037	5 0
May	42,200	53,407	25 4	21 0	9,025	4 3
June	40,900	49,295	24 1	20 2	8,080	1 0

LUIPAARDSVLEI ESTATE.

Capital: £472,012.

Ore Reserves: 645,000 tons 5.5 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	19,560	21,391	21 10	22 6	*888	0 11
February	18,860	20,950	22 3	22 2	*230	0 3
March	21,000	20,687	19 8	21 6	*2,207	2 1
April	20,000	20,797	20 10	22 3	*1,598	1 7
May	20,850	22,581	21 8	20 11	484	0 6
June	21,763	22,177	20 1	19 8	652	0 7

* Loss.

MEYER AND CHARLTON.

Capital: £200,000.

Dividends, 1918: 110 p.c. June, 1919, 50 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	12,750	39,178	61 11	25 8	22,545	35 4
February	11,625	33,986	58 6	24 11	19,045	32 9
March	14,000	39,368	56 3	23 3	22,508	32 9
April	13,640	40,082	58 9	23 5	23,510	34 6
May	14,450	40,574	56 2	23 1	23,306	32 3
June	14,030	40,803	58 2	23 9	23,505	33 6

MODDER "B."

Capital: £700,000.

Ore Reserves: 3,378,000 tons 9.2 dwts. Dividends, 1918: 82½ p.c.
June, 1919, 15 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	58,000	127,755	44 1	21 7	65,026	22 5
February	48,000	115,691	48 2	22 11	60,342	25 2
March	54,000	124,085	46 0	22 6	63,021	23 4
April	54,000	121,375	44 11	22 3	61,062	22 7
May	55,000	120,487	43 10	20 11	62,001	22 7
June	54,500	121,239	44 6	20 11	63,160	23 2

MODDER DEEP.

Capital: £500,000.

Ore Reserves: 3,450,000 tons 8.8 dwts. Dividends, 1918: 97½ p.c.
1919: 50 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	44,400	88,888	40 0	16 11	51,013	23 0
February	39,700	83,128	41 11	16 9	47,148	23 9
March	42,800	89,100	41 8	17 7	51,151	23 11
April	41,100	89,245	43 5	18 1	51,818	25 3
May	44,200	93,170	42 2	17 7	53,955	24 5
June	41,500	93,807	45 3	18 2	55,771	26 11

NEW GOCH.

Capital: £550,000.

Ore Reserves: 111,670 tons 5.6 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	14,300	13,491	17 10	19 3	*98	0 2
February	12,550	12,684	19 11	21 0	*513	0 10
March	15,500	14,200	17 6	19 0	*611	1 0
April	16,600	13,771	16 0	17 2	*580	0 8
May	16,700	13,631	15 9	17 5	*524	0 7
June	14,710	11,837	19 5	19 3	522	0 8

* Loss.

NEW HERIOT.

Capital: £115,000.

Ore Reserves: 223,420 tons 7.12 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	11,900	15,067	25 4	26 11	*1,128	1 11
February	10,100	14,153	28 0	28 8	*495	1 0
March	11,190	16,813	30 1	27 7	1,167	2 1
April	10,610	14,850	28 0	29 0	*718	1 4
May	12,180	16,290	26 9	25 11	334	0 6
June	11,380	16,035	25 9	27 7	157	0 3

* Loss.

NEW KLEINFONTEIN.

Capital: £1,300,000.

Ore Reserves: 2,048,000 tons 5.78 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	45,740	57,769	25 3	27 7	*6,145	2 8
February	53,500	64,120	24 0	23 4	712	0 3
March	66,000	77,920	23 7	23 1	598	0 2
April	57,900	72,262	25 0	24 2	1,033	0 4
May	59,480	71,557	21 1	24 7	*2,786	0 11
June	53,860	67,288	23 11	26 3	*1,891	1 10

* Loss.

NEW MODDERFONTEIN.

Capital: £1,400,000 (£4 shares).

Ore Reserves: 9,000,000 tons 8.6 dwts. Dividends, 1918: 51½ p.c.
June, 1919: 32½ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	76,000	170,181	44 9	20 3	91,274	24 0
February	78,000	168,843	43 3	19 1	93,173	23 11
March	88,000	185,677	42 2	20 1	95,168	21 7
April	82,000	175,300	42 9	20 3	90,131	22 0
May	84,500	179,709	42 6	20 3	92,153	21 10
June	79,000	173,923	41 0	20 6	91,413	23 2

NEW PRIMROSE.

Capital: £325,000.

Ore Reserves: 65,690 tons 6 1 dwts. Dividends, June, 1919: 5 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	17,300	16,345	18 11	17 7	1,138	1 4
February	15,600	15,317	19 0	18 1	1,211	1 7
March	18,000	16,502	18 4	16 11	1,280	1 5
April	19,000	17,161	18 1	16 1	1,017	2 0
May	20,300	18,652	17 1	16 0	2,423	2 5
June	19,500	18,066	18 6	16 0	2,431	2 6

NEW UNIFIED.

Capital: £250,000.

Ore Reserves: 1,808,840 tons 6.5 dwts. Dividends, 1918: 10 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	13,400	12,293	18 4	15 1	2,189	3 3
February	12,300	11,040	17 11	15 1	1,750	2 10
March	13,700	12,318	17 2	15 0	2,060	3 0
April	12,000	11,855	19 9	16 8	1,852	3 1
May	12,200	12,025	19 9	16 8	1,841	3 0
June	11,600	11,618	20 0	16 11	1,799	3 1

NOURSE MINES.

Capital: £827,821.

Ore Reserves: 1,513,600 tons 6.8 dwts. Dividends, 1918: 3 3/4 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	35,000	50,098	28 8	27 11	561	0 4
February	32,600	47,256	28 8	28 5	310	0 2
March	40,600	57,442	28 1	26 7	3,175	1 7
April	38,100	54,307	28 6	27 6	1,426	0 9
May	40,900	56,210	27 2	25 10	2,582	1 3
June	40,600	53,734	26 4	25 1	2,105	1 0

* Loss.

RANDFONTEIN CENTRAL.

Capital: £1,500,000.

Ore Reserves: 1,254,000 tons 6.8 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	143,000	160,900	22 6	21 4	8,293	1 2
February	135,000	153,190	22 5	21 7	7,603	1
March	143,000	166,439	23 3	21 9	11,020	1 6
April	138,000	162,705	23 7	22 3	9,149	1 4
May	141,000	166,163	22 9	21 9	9,359	1 1
June	150,000	171,120	22 9	21 3	11,795	1 7

* Loss.

ROBINSON.

Capital: £2,750,000 (£5 shares).

Ore Reserves: 322,000 tons. Dividends, 1918: 2 1/2 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	38,500	45,442	23 7	21 0	1,779	2 6
February	35,800	41,857	23 5	20 11	4,135	2 4
March	40,000	43,709	21 10	20 0	3,259	1 8
April	36,300	42,189	23 3	21 10	2,137	1 2
May	40,900	42,035	20 7	19 11	2,453	1 2
June	35,400	35,791	20 3	23 5	*5,747	3 3

ROBINSON DEEP

Capital: 681,807 "B" shares, £1 each, and 500,000 "A" shares, 1s. each.

Ore Reserves: 1,632,000 tons 6.9 dwts. Dividends, 1918: 23 p.c. per "A" share.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	35,200	51,075	29 0	31 8	*5,351	3 0
February	36,000	49,834	27 8	28 1	*1,313	0 9
March	44,200	59,693	27 0	25 2	3,250	1 6
April	45,300	62,578	27 8	25 2	4,826	2 2
May	52,200	73,320	28 1	24 3	9,112	3 6
June	50,000	67,679	27 1	24 5	5,668	2 3

* Loss.

ROODEPOORT UNITED.

Capital: £160,000.

Ore Reserves: 223,000 tons 6.02 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Loss. £	s. d.
January	21,000	23,736	19 4	20 3	*966	0 10
February	23,300	22,797	19 1	20 7	*1,019	0 14
March	25,100	22,088	17 5	20 0	*2,962	2 4
April	24,200	23,231	19 0	20 2	*1,084	0 11
May	23,800	21,931	18 4	20 7	*1,994	1 8
June	23,100	22,267	19 2	20 9	*1,543	1 4

* Loss.

ROSE DEEP.

Capital: £700,000.

Ore Reserves: 2,909,520 tons 5.3 dwts. Dividends, 1918: 17 1/2 p.c.
June, 1919: 7 1/2 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	48,000	54,940	22 10	19 6	7,846	3 3
February	47,500	55,751	23 6	19 7	8,519	3 7
March	54,000	60,505	22 5	18 7	9,570	3 7
April	53,000	63,261	23 10	18 6	13,892	5 3
May	51,500	64,396	25 0	19 2	14,257	5 6
June	50,600	60,084	23 9	18 10	11,740	4 8

SIMMER AND JACK.

Capital: £3,000,000.

Ore Reserves: 1,538,000 tons 5.6 dwts. Dividend, 1918: 1 1/4 p.c.
June, 1919: 1 1/4 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	41,100	49,057	22 3	21 2	2,501	1 2
February	37,100	42,643	23 0	22 6	2,365	1 3
March	44,700	48,059	21 6	22 2	*868	0 5
April	46,800	46,589	19 11	21 0	*3,468	1 6
May	54,800	59,859	21 7	19 5	5,228	1 11
June	57,400	61,091	21 3	18 5	6,129	2 2

(d) In addition, £1,035 taken from reserve.

(e) In addition, £2,124 taken from reserve.

SIMMER DEEP.

Capital: £1,650,000.

Ore Reserves: 932,000 tons 5.02 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	43,300	48,135	22 3	22 5	*947	0 5
February	37,900	42,622	22 6	23 10	3,109	1 8
March	40,600	41,645	20 6	24 2	*7,903	3 11
April	38,600	39,309	20 4	25 0	*9,432	4 11
May	43,700	42,533	19 5	22 9	*7,774	3 7
June	43,600	45,820	21 0	22 2	*3,178	1 5

* Loss.

SUB NIGEL.

Capital: £775,000.

Ore Reserves: 387,000 tons 10.3 dwts. Dividends, 1918: 11 1/3 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
1918.						
December	9,700	25,746	53 1	36 6	7,569	15 7
1919.						
January	9,100	26,149	57 6	11 2	7,105	15 7
February	8,500	24,399	56 6	37 10	7,956	18 9
March	9,400	23,643	50 4	40 1	5,828	12 5
May	10,300	25,359	49 3	40 7	1,121	8 0
June	10,400	27,920	53 8	37 9	7,142	13 9

SPRINGS MINES.

Capital: Authorised, £1,500,000; registered, £1,300,000; issued, £1,153,500.

Ore Reserves: 2,256,062 tons 8.69 dwts. Dividends, 1918: 22 1/2 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	33,350	72,450	43 5	25 3	30,287	18 2
February	35,300	68,022	38 6	24 3	25,271	14 4
March	37,350	71,625	38 4	25 2	23,729	12 8
April	34,940	67,721	37 9	25 6	22,771	13 0
May	36,070	68,261	37 4	24 7	23,160	12 10
June	33,500	63,559	37 11	25 5	20,203	12 1

TRANSVAAL G.M. ESTATES.

Capital: £604,225.

Dividends, 1918: 6 1/4 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
1918.						
December	3,550	1,915	27 8	64 1	*6,508	36 8
1919.						
January	11,380	14,155	25 5	29 9	*2,780	4 11
February	12,850	18,771	29 3	26 9	1,167	1 10
March	15,910	25,588	32 2	24 9	5,310	6 8
May	16,830	24,777	29 5	22 8	5,555	6 7
June	15,590	26,221	33 5	25 0	6,309	8 1

* Loss.

VAN RYN.

Capital: £500,000.

Ore Reserves: 1,347,816 tons 5.6 dwts. Dividends, 1918: 10 p.c.
1919: June, 5 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
January	32,600	32,011	19 6	16 11	4,133	2 6
February	31,100	31,599	20 4	17 6	4,140	2 8
March	34,000	33,689	19 5	17 0	4,507	2 8
April	35,150	33,956	18 7	16 7	4,514	2 7
May	35,900	34,827	19 5	16 5	5,151	2 10
June	35,250	34,933	17 3	16 7	6,988	3 11

VAN RYN DEEP.

Capital : £1,196,892.

Ore Reserves : 2,115,759 tons 9.0 dwts. Dividends, 1918 : 15 p.c.
June, 1919 : 22½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	42,900	95,748	44 8	22 8	47,179	22 0	
February	43,350	94,992	41 5	21 11	47,536	21 11	
March	50,000	105,632	42 0	20 10	53,456	21 5	
April	47,400	103,560	43 8	21 2	53,288	22 6	
May	49,600	103,492	41 9	20 3	53,225	21 6	
June	46,700	99,966	42 10	20 6	52,024	22 3	

VILLAGE DEEP.

Capital : £1,060,671.

Ore Reserves : 2,327,200 tons 6.3 dwts. Dividends, 1918 : 3½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	18,200	65,886	27 4	25 5	4,262	1 9	
February	45,800	59,629	26 0	21 7	2,580	1 2	
March	54,000	69,166	25 7	24 6	2,089	0 9	
April	13,400	63,176	29 1	27 10	2,129	1 0	
May	17,200	68,405	29 0	26 2	5,844	2 6	
June	38,900	61,949	31 10	30 2	2,501	1 3	

* Loss.

VILLAGE MAIN REEF.

Capital : £472,000.

Ore Reserves : 628,150 tons 7.1 dwts. Dividends, 1918 : 10 p.c.
June, 1919 : 1 Village Deep share for 4 Village Main Reefs.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	18,200	25,729	28 2	25 11	2,434	2 9	
February	17,000	21,795	25 8	23 11	1,188	1 5	
March	18,790	24,471	25 8	23 8	1,960	2 1	
April	17,700	23,239	26 0	24 6	1,216	1 4	
May	19,400	25,835	26 5	23 6	3,189	3 3	
June	17,400	22,330	25 6	24 3	1,079	1 3	

WEST RAND CONSOLIDATED.

Capital : £2,001,424.

Ore Reserves : 1,208,300 tons 6.1 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	30,500	36,259	23 8	22 11	1,159	0 9	
February	28,600	33,362	23 2	23 1	111	0 1	
March	32,800	37,886	23 1	22 2	1,295	0 9	
April	32,000	38,421	23 9	23 1	1,159	0 9	
May	33,120	39,053	23 7	22 7	1,408	0 10	
June	31,620	37,588	23 9	22 7	2,537	1 0	

* Loss.

WITWATERSRAND.

Capital : £175,000 ; issued, £469,625.

Ore Reserves : 1,390,000 tons 6.0 dwts. Dividends, 1918 : 15 p.c.
June, 1919 : 7½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	35,500	38,157	21 2	19 10	2,881	1 7	
February	30,750	34,942	22 9	21 1	2,496	1 7	
March	35,100	39,376	22 5	19 19	4,523	2 7	
April	32,500	40,732	25 1	21 7	5,609	3 5	
May	35,500	42,783	24 1	20 11	5,604	3 2	
June	33,900	40,842	24 0	21 5	1,521	2 8	

WITWATERSRAND DEEP.

Capital : £550,000.

Ore Reserves : 953,665 tons 8.3 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	27,580	35,800	26 0	27 7	*1,958	1 5	
February	27,300	32,928	24 1	26 1	*3,102	2 3	
March	32,700	37,822	23 2	23 5	*998	0 7	
April	30,450	37,049	24 1	24 7	*921	0 7	
May	31,600	36,280	23 0	23 9	1,979	1 3	
June	29,900	36,339	24 4	24 0	12	—	

* Loss.

WOLHUTER.

Capital : £860,000.

Dividends, 1918 : 6½ p.c. April, 1919 : 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	s. d.	£	s. d.	
January	29,250	35,792	24 6	21 5	4,345	3 0	
February	26,600	33,625	24 11	27 0	3,970	3 0	
March	28,700	36,603	25 6	22 9	3,579	2 6	
April	28,500	35,791	25 1	22 7	3,238	2 3	
May	30,000	37,877	25 3	22 7	3,598	2 5	
June	20,700	39,381	25 2	21 9	5,570	3 8	

Swaziland Tin.

The following are the results of the operations of this company for the month of June, 1919: Concentrates recovered, 29 long tons; estimated profit (taking tin at £220 per ton), £494; add adjustments in respect of previous shipments, £631; total, £1,125.

Companies Struck Off.

Notice is given in accordance with the Companies Act that the names of the undermentioned Companies have been struck off the Register:—Excelsior Buildings Co., Ltd.; The United Baking Co., Ltd.; The Keeling Agency, Ltd.; International Patents Exploitation, Ltd.; The Malgo Developing Syndicate, Ltd.; The London and Rhodesia Investment Co., Ltd.; Trimble's Detective Agency, Ltd.; The Universal Stores, Ltd.; African Illustrated Newspaper Co., Ltd.; The Premier Timber Co., Ltd.; Agricola, Ltd.; The Johannesburg Psychical Research Society; New North Clewer, Ltd.; The Modern Dairy, Ltd.; Albert Phillips and Co., Ltd.; Star of Rhodesia, Ltd.; Koehler Motor Wagon Agency, Ltd.; Macklin, Ltd.; The Apollo Theatre, Ltd.; Hughes Meat Market, Ltd.; The Kangaroo Tobacco Co., Ltd.; The Diamond Cycle and Motor Works, Ltd.; Artists Hotels, Ltd.; The Tipperary Tea Rooms, Ltd.; T. and F. Company, Ltd.; G. W. Shilling and Co., Ltd.; The Guildhall Co., Ltd.; Douglas Tin Recovery Co., Ltd.; Paruk and Co., Ltd.; The Industrial and Mercantile Trust, Ltd.; The Rand Commercial Agency, Ltd.; Sun Shine Settlements, Ltd.; H. R. Smulian and Co., Ltd.; Sayed, Ltd.; Edwards and Lys (Timber), Ltd.; The Fairview Steam Bakery Co., Ltd.; Mhlali Oxides, Ltd.; The E. B. D. Madagascar Syndicate, Ltd.; Legates Monthly, Ltd.; Harvester Diamond Mining Co., Ltd.; Beau Monde, Ltd.; Abrama, Ltd.; The Standard Firewood and Supply Co., Ltd.; Ward, Ltd.; The Magnet Chemical Works, Ltd.; The Invalid Chair and Cabinet Works, Ltd.; The East Rand Club, Ltd.

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THE S.A. MINING AND ENGINEERING JOURNAL ENQUIRY PAGE.

Informative Service Free to Readers of this Journal.

In response to requests from numerous readers of this journal resident in various parts of Africa, and also Overseas, it has been decided to extend and amplify the enquiry columns of this journal in regard to the affairs of companies and syndicates in which readers may be interested or propose to become interested.

In connection with this information service, which is offered free to all readers, the following regulations must be distinctly understood and observed:—

1. *The South African Mining and Engineering Journal*, whilst undertaking to obtain the latest and most accurate information available in regard to assets, liabilities, operations, finance, Directorate, offices and prospects, etc., disclaims any responsibility for pecuniary loss in speculation or investments resulting from such information.
2. We cannot undertake to advise clients to buy or sell or hold, or to give "Sharemarket tips." We supply the most reliable and up-to-date information available and readers must form their own judgment therefrom.
3. Under no circumstances can letters be replied to direct. Communications can only be answered in this column.
4. Enquirers may use a pen name or give their real names, as they wish, but the correct name and full address of the enquirer must accompany each communication, not necessarily for publication, but as a guarantee of good faith.
5. In future we shall publish the name of the company or syndicate about which enquiries are made.
6. All enquiries should be addressed to the Editor, *The South African Mining and Engineering Journal*, Box 963, Johannesburg, and marked "Enquiry" in the top left hand corner of the envelope.

The following communications are answered in this issue:—

"MOHAWK" (Pretoria) writes: Are Frank Smiths still worth holding, costing 11s. 6d.? Are Princess Estates still worth holding, costing 3s. 9d.? Costing 65s., are Springs Mines prospects likely to bring them up to this price? Are they worth keeping for dividends?

See conditions under which enquiries are answered. We have recently had several paragraphs re the position of Frank Smiths which should enlighten you. As to Princess Estates, the position at the mine is slightly better (see quarterly report elsewhere in this issue). Springs Mines: As stated in our last issue, it is considered that the period of maximum difficulties has been surmounted, but profits will be adversely affected by the increase in development charges, which are referred to elsewhere in this issue.

"CASSITERITE."

Zaaiplaats: The outlook is understood to be improving. See a note on this property elsewhere in this issue.

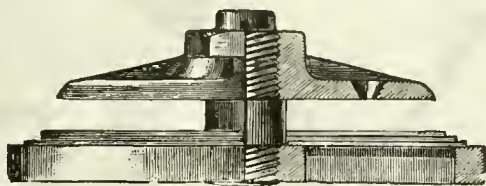
Rooibergs: Yes. A new and promising lode has been discovered.

South African Cotton and Tobacco Estates.

A rather extraordinary prospectus going the rounds is that of the South African Cotton and Tobacco Estates, which has a capital of £65,000 in 5s. shares and a debenture issue of £10,000, says the *Financial Times*. The London Pioneer Syndicate of Manchester has purchased 150,000 shares, on what terms are not disclosed, and is offering them at 5s. 6d. per share. The particulars of the company given in a letter from the chairman to the syndicate are of the most vague and general character. The land owned is stated to be 40,000 acres in the Zoutpansberg district of the Transvaal, and it is proposed to cultivate 2,000 acres. A profit of 20 per cent. is promised by the middle of 1920, and in six years' time it is calculated the profits should reach 100 per cent.

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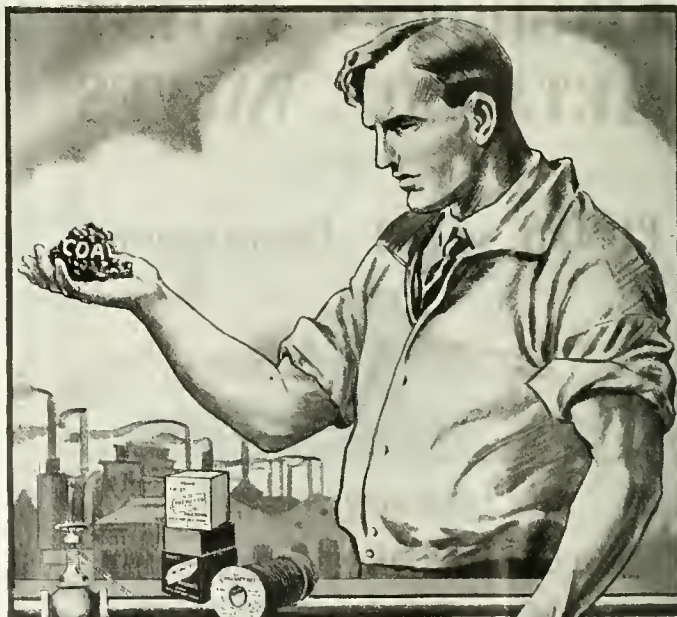
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PROGRESS AT GEDULD, MODDER DEEP AND PRINCESS ESTATE.

The payable reef disclosures at the Geduld Proprietary Mines during the quarter ended June 30 were 645 feet, having an assay value of 17.2 dwts. over 37 inches. The registered capital of the company has been further increased to £1,152,000 and the issued capital to £1,150,000. Arising out of the recent judgment under the Provincial Gold Profits Tax Ordinance, 1918, payment of £5,080 15s. has been effected for the financial year ended December 31, 1918, for which no provision was made in that year's accounts. Comparison of results: March, 1919, quarter: Tons milled, 125,900; working profit, £60,182; working costs per ton milled, 19s. 7.8d.; yield per ton milled, 29s. 2.5d. June, 1919, quarter: Tons milled, 128,800 (2,900 increase); working profit, £62,013 (£1,831 increase); working costs per ton milled, 20s. 2.4d. (6.6d. increase); yield per ton milled, 29s. 9.9d. (7.4d. increase).

MODDERFONTEIN DEEP LEVELS.

The payable reef disclosures for the quarter were: 935 feet, having an assay value of 13.4 dwts. over 57 inches. Arising out of the recent judgment under the Provincial Gold Profits Tax Ordinance, 1918, payment of £21,813 8s. 6d. has been effected for the financial year ended December 31, 1918, for which no provision was made in that year's accounts. No expenditure on capital account was incurred

during the quarter. The expenditure incurred during the quarter amounted to £7,737 15s. 8d., whereas the fixed charge to working costs of 1s. per ton milled gives £6,310. Comparison of results: March, 1919, quarter: Tons milled, 126,900; working profit, £149,314; working costs per ton milled, 17s. 5.8d.; yield per ton milled, 11s. 0.2d. June, 1919, quarter: Tons milled, 126,800 (100 decrease); working profit, £161,544 (£12,230 increase); working costs per ton milled, 17s. 11.2d. (5.4d. increase); yield per ton milled, 13s. 5.0d. (2s. 1.8d. increase).

PRINCESS ESTATE.

The footage sampled during the quarter was as follows: South Reef, 180 feet, averaging 8.2 dwts. over 28 inches; Main Reef, 515 feet, averaging 6.9 dwts. over 12.6 inches. It is estimated that the payable ore (based on the milling width) developed by the above footage is: South Reef, 2,834 tons; Main Reef, 25,594 tons; total, £28,428 tons. The figures are subject to re-calculation at the end of the year, when block values are made out. Comparison of results: March, 1919, quarter: Tons milled, 59,500; working costs per ton milled, 28s. 5.7d.; yield per ton milled, 24s. 4.2d. June, 1919, quarter: Tons milled, 59,500; working costs per ton milled, 27s. 8.4d. (9.3d. decrease); yield per ton milled, 26s. 5.2d. (2s. 1d. increase).

R.S.M. Old Students' Dinner.

There was a large gathering in mail week at the first of the dinners of the Royal School of Mines Old Students' Association since the outbreak of war, and the function was a most successful one. Mr. Edward T. McCarthy, who was in the chair, had on his right hand Sir Alfred Keogh and on his left Sir Lionel Phillips. Among others present were Sir J. K. Rose, Dr. Willet Miller (of Ontario), Mr. Walter McDermott, Mr. Hugh Picard, Mr. H. F. Marriott, Mr. Cordner James, Lieut.-Col. Nissen and Professor Truscott. Mr. McCarthy welcomed back the R.S.M. students who took part in the war, and referred in well-chosen words to those brave fellows who had laid down their lives, remarking that could they send back a message he was sure it would be to tell their colleagues to "carry on." In course of his speech the chairman gave some account of the stewardship of the committee during the war period, mentioning that a guarantee fund has been founded especially to help R.S.M. men who are disabled and in necessitous circumstances, that arrangements have been made to have written and published the history of the Royal School of Mines, and that it is proposed to form local branches of the association in the chief mining centres abroad. The toast was responded to by Major H. R. Ruggles-Brise and Major Leslie Nofcutt. Sir Lionel Phillips, in proposing the toast of the Royal School of Mines, compared the British engineer with the German engineer. English engineers, he remarked, generally have an adaptability and an inventive capacity, and are ready to take responsibilities. German engineers were thoroughly trained in the text book, but were steeped in it to such an extent that if you put to them anything outside the text book they would probably say it did not exist. Referring to the question of the organisation of the mining industry, Sir Lionel said he believed there was a great field for enterprise in this country if people could be got to organise, so that they could speak with one voice when attacked. We had always muddled through. We had always had a Government which had taken no interest in whether the mines were being worked properly or the products were being used to the best advantage. Replying to the toast, Sir Alfred Keogh, of the Imperial College of Science and Technology, said the Royal School of Mines was the premier school of mining in the Empire, but they could not honestly say it was the best school in the world. But they could make it so, and it was of enormous importance that students of the Royal School of Mines should organise themselves in connection with the future of the

school; its future depended very largely upon those present that evening. He thought it would be a good thing if the R.S.M. Old Students' Association and the Institution of Mining and Metallurgy could be brought more closely into touch with their methods at Kensington. Sir Alfred Keogh mentioned the interesting fact that 424 students of the Royal School of Mines joined up at the beginning of the war and 174, or 41 per cent., gained distinctions—"a percentage good enough to boast of," he added.

General Mining and Finance Corporation, Limited.

(Incorporated in the Transvaal.)

P.O. Box 1242.

General Mining Buildings,
Johannesburg, 28th July, 1919.

NOTICE IS HEREBY GIVEN that the Nineteenth Ordinary General Meeting of Shareholders of the General Mining and Finance Corporation, Limited, will be held in the Board Room, General Mining Buildings, Johannesburg, on Thursday, the 4th day of September, 1919, at 11 a.m., for the following purposes:—

1. To receive and consider the Balance Sheet and Profit and Loss Account, and the Directors' and Auditors' Reports for the year ended 31st December, 1918.
2. To elect a Director in place of Mr. Jacob Freudenthal, who retires in terms of the Articles of Association, but who is eligible, and offers himself for re-election.
3. To appoint an Auditor or Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors.
4. To transact any other business which ought to be transacted at an Ordinary General Meeting.

The Share Transfer Books of the Corporation will be closed as follows:—

- (a) At the Head Office from the 1st of September to the 18th of September, 1919, both days inclusive.
- (b) In London from the 1st of August to the 9th of August, 1919, both days inclusive.

Holders of Share Warrants to Bearer desiring to be present or represented at the Meeting should deposit their Shares at the places and within the times following:—

JOHANNESBURG: At the Head Office of the Corporation, General Mining Buildings, at least three days before the time appointed for the holding of the Meeting; or

LONDON: At the London Office (Transfer Department), Winchester House, Old Broad Street, E.C.

PARIS: At the Paris Office, 29, Rue Taillout; at the Bank de l'Union Parisienne, 7, Rue Chauchat; at least thirty days before the date appointed for the holding of the Meeting.

By Order of the Board,
H. W. DALTON, Secretary.



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THE WEEK IN THE SHAREMARKET.

A Modderfontein Market—Further Rise in Modder East Debentures.

At the opening on Friday Modder Easts were done at 23s. and the Debentures at £130. On call Crown Diamonds, which had dropped to 23s., recovered to 24s. 9d. Government Areas, Springs and Gedulds were easier. Modder Deeps and New States advanced, otherwise there was no material change. Modder Easts were persistently damped down all day with an unending seller at 23s. On Saturday they at last turned the scale with buyers at 23s. and sales 3d. better. There was a good demand for Geduld Props at the call. With a commencing sale at 46s. they rose by 3d. advances to 46s. 9d. and subsequently 47s. 9d. Modder East Debentures were done at £130 and £132. At the early business on Monday Modder Easts were sold at 23s. 3d., the Debentures at £133, and Wolhuters at 2s. 9d. Prices were firm on call with improvements in Modder Bs., Government Areas, Van Ryn Deeps, Springs and Modder Options. The latter rose subsequently to buyers at 5s. of the three-years and 6s. 3d. of the four-years. Debentures advanced to £136. On Tuesday morning there were sales of Modder Easts at 23s. 6d. and 23s. 3d.; Debentures at £138; Springs at 48s. At the call Springs lost another shilling. Sub Nigels were also easier as well as Modder East Options. Van Ryn Deeps advanced owing to steady buying. These were the only changes of importance. At the close Modder Easts weakened to 23s. sellers and Debentures to £133 sales. On Wednesday a start was made with Modder Easts at 23s. 3d. and the Debentures at £136 and £137. Springs were absorbed at 47s. and Zaaiplaats at 8s. The market was firm at the call, all the better stocks keeping up their values, and in the smaller ones an advance in Zaaiplaats. The only business of note on Thursday morning was a sale of Modder Easts at 23s. 3d. and sales of Debentures at £136 and £136 10s. This stock is now being officially quoted. At the call prices were firm with advances in Daggafonteins, Main Reefs, Modder Deeps and New States. The following outside business was done during the past week:—Sales: Phoenix, 1s. 1d. and 1s. 2d.; Makganyene Diamonds, 30s. and 29s.; Compound Diamonds, 11s. to 13s.; Monteleos, 14s.; New Farms, 1s. 10½d.; Theron Diamonds, 19s. Buyers of Lydenburg Lands at 2s. 3d.; and sellers of Union Tins at 5s.

	Fri., 25th.	Sat., 26th.	Mon., 28th.	Tues., 29th.	Wed., 30th.
African Farms	11 3*	11 0*	14 3*	14 3*	14 3*
Anglo-American Corp.	26 0†	24 0*	—	—	26 0†
Apex Mines	6 11*	6 11*	6 11*	7 0*	6 11*
Bantjes Consolidated	2 7*	2 5	2 8	2 10	2 8*
Brakpan Mines	61 6*	61 6	61 6	62 6*	62 6*
Brick and Potteries	—	—	4 6*	4 6*	4 6*
British South Africa	22 0*	22 6*	22 6*	22 0*	22 6*
Bushveld Tins	1 8*	1 8*	1 10	1 11*	1 10*
Cassell Coals	26 0*	—	—	25 0*	27 6*
Cinderella Cons.	1 9*	—	4 9*	4 9*	4 9*
City and Suburbans	7 0*	7 0*	6 9*	7 0*	7 3
City Deeps	51 6*	52 0*	52 6	53 6	54 0
Clydesdale Collieries	—	—	—	—	22 6*
Con. Investments	—	—	—	—	27 6*
Con. Langlaagtes	18 6*	18 0*	18 9†	18 9	18 0
Con. Main Reefs	9 1*	9 0*	9 0*	9 1*	9 6
Con. Mines Selection	21 3*	21 9	21 9*	21 0*	21 0*
Coronation Freeholds	1 9*	1 9*	1 10*	1 10*	1 10*
Crown Diamonds	24 6	24 3	23 9*	23 6	23 6*
Crown Mines	—	43 9*	—	—	—
Daggafontein Mines	22 9	23 0†	23 0†	22 0	21 6*
East Rand Coals	2 5	2 6†	—	2 6†	2 5†
East Rand Deeps	0 10*	0 10*	0 10*	0 10*	1 0*
East Rand Minings	20 0*	20 0*	20 0*	20 0*	20 0*
East Rand Proprietary	5 9*	5 9*	—	6 2*	6 6
East Rand Debentures	£62*	—	£68*	£68*	—
Eastern Golds	1 2*	1 2*	1 2*	1 3	1 3*
Frank Smith Diamonds	4 11	4 11*	4 10*	5 0	4 11*
Geduld Props	45 9	46 9	47 6	47 3	47 6
Geldenhuis Deeps	6 0*	6 6*	—	—	—
Ginsbergs	1 7	1 7*	—	—	—
Glencairns	1 0*	—	1 0*	—	1 0*
Glencoe Collieries	5 0*	5 0*	5 0*	—	5 0*
Glynn's Lydenburgs	—	—	17 0*	—	—

*Buyers. †Sellers. ‡Odd lots. §Ex London.

	Fri., 25th.	Sat., 26th.	Mon., 28th.	Tues., 29th.	Wed., 30th.
Government Areas	90 3	90 0	90 9	91 6	91 0
Job. Bd. of Executors	30 0*	30 0*	30 0*	30 0*	30 0*
Jupiters	—	4 3†	3 1*	3 1*	—
Kierksodorp Props.	1 3*	1 3*	1 3*	1 3*	1 3*
Knights Centrals	7 0†	6 7*	7 0	7 1*	7 3
Knights Deeps	—	—	—	6 0*	6 3*
Lace Props.	17 3*	17 6	17 6	17 0*	17 0*
Leenwpoort Tins	24 0*	23 9*	23 6*	23 6	23 6*
Luipaardsvlei Estates	3 1*	3 1*	3 6†	3 0*	3 6*
Lydenburg Farms	8 5*	8 6	8 4*	8 3*	8 3*
Meyer and Charltons	—	90 0†	—	—	85 0*
Middelvlei Estates	—	1 8*	1 11*	1 8*	1 9*
Modder B's	157 6*	157 6*	160 0	162 6†	160 0*
Modder Deeps	165 0	166 0	163 0*	163 0*	164 0*
Modder Easts	22 10*	23 3	23 0*	23 4½	23 3*
Modder Options (3 years)	4 8	4 8*	4 10*	4 11	4 10
Modder Options (4 years)	5 0*	5 10*	5 10*	—	5 11
Hume Pipes	26 6*	26 3*	26 0*	26 0*	26 0*
Natal Navigation Collieries	—	22 0*	22 6*	22 6*	—
National Banks	—	296 3	300 0†	300 0†	300 0†
New Boksburgs	1 3*	—	—	—	—
New Eland Diamonds	25 0*	25 0*	25 0*	—	25 0*
New Era Cons.	10 9*	10 9*	10 9*	11 0†	10 9*
New Geduld Deeps	4 7*	4 7	4 7*	4 6*	4 6*
New Heriots	9 0†	8 9†	6 6*	6 6	—
New Kleinfonteins	9 9	9 6*	9 6*	9 6*	9 6*
New Modderfonteins	£26½*	£26	£26½	£26½	£26*
New Primrose	2 3*	—	2 6*	—	2 6*
Nigels	5 9*	—	5 9*	—	—
Nourse Mines	9 9*	10 0*	10 0*	10 0*	10 3*
Premier Deferreds	155 0*	160 0*	160 0*	160 0*	160 0*
Premier Preferreds	145 0*	145 0*	150 0†	145 0*	145 0*
Pretoria Cements	74 0*	74 6*	75 0*	75 0*	75 0*
Princess Estates	2 3*	2 3*	2 3*	2 5	2 6†
Rand Collieries	3 0*	3 0*	3 0*	3 0*	3 0*
Rand Mines	—	—	—	—	65 0†
Rand Nucleus	1 9*	—	1 9*	1 9*	1 9
Rand Selection Corp.	75 6†	71 6	—	70 0*	71 0*
Randfontein Deeps	4 3*	4 3*	4 0*	—	4 6*
Randfontein Estates	15 3*	15 3*	15 6*	15 6*	15 3*
Roberts Victors	13 0*	13 0*	13 0*	13 0*	13 0*
Rooibergs	7 9	7 0*	7 1*	7 0	6 6*
Ryan Nigels	3 6*	3 9*	3 9*	3 9*	3 9
Shebas	—	1 3*	1 3*	—	1 3*
Simmer and Jacks	—	—	—	8 10*	—
Simmer Deeps	1 3	1 3*	1 4*	1 6*	1 4*
S.A. Breweries	32 6*	—	—	—	—
South African Lands	5 11	5 10*	5 10*	5 9	5 10*
Springs Mines	48 0	47 9	48 6	47 0	46 9
Sub Nigels	21 9	21 6*	21 6*	21 0	21 0*
Swaziland Tins	18 0†	17 0†	13 6*	—	—
Transvaal Lands	27 6*	—	—	27 6*	—
Transvaal G.M. Estates	12 6*	—	—	13 0*	—
Van Ryn Deeps	—	67 6	63 0*	69 0	69 0
Van Dyks	1 9*	1 9*	1 9*	—	2 3*
Village Deeps	12 0†	11 6*	11 9*	11 9*	11 9*
Welgedachts	27 6†	—	—	—	—
West Rand Consolidateds	—	—	4 0*	—	—
Western Rand Estates	4 6*	—	4 3	4 0*	4 0*
Witbank Collieries	—	—	57 6*	—	—
Witwatersrand Deeps	14 9	14 6*	14 6*	14 6*	14 6*
Wit Townships	—	—	30 0*	—	—
Wolhuters	2 7*	2 9	2 9	2 11	2 11

*Buyers. †Sellers. ‡Ex London. §Odd lots.

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THREE SEAS BRAND.

PERSONAL.

Major M. McCormack, M.C., O.B.E., Secretary of the Rand Water Board, has returned to the Rand.

* * * *

Captain Hely Hutchinson, R.F.A., assistant general manager of the Consolidated Gold Fields, returned from active service in Europe this week.

* * * *

Mr. J. Taylor, of Messrs. Sandycroft, Ltd., has returned to the Rand after serving through the war with the Welsh Fusiliers. Mr. M. I. Williams Ellis, formerly of the same firm, is now Chief Electrical Engineer to the Kantara Military Railways in Palestine.

* * * *

The retirement of Mr. H. O. Buckle from the chairmanship of the Miners' Phthisis Board is announced. For three years he has filled the position with conspicuous ability and success. His place will be taken by Mr. T. G. Macfie, who, like Mr. Buckle, gives up the position of Chief Magistrate of Johannesburg to become chairman of the Phthisis Board.

* * * *

The Transvaal Chamber of Mines has inaugurated a Department of Labour, covering European and native labour matters. Mr. W. Gemmill, joint-secretary and actuary, has been appointed actuary and labour adviser to the Chamber, in charge of that department. Mr. E. L. R. Kelsey, joint-secretary and legal adviser, has been appointed secretary and legal adviser to the Chamber. Lieut.-Colonel H. S. Ebben, O.B.E., has been appointed assistant to Mr. Kelsey, and Mr. James Boyd, chief dust inspector of the Chamber, has been appointed assistant to Mr. Gemmill.

CORRESPONDENCE AND DISCUSSION.

A Query from Vryheid.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Would any of your kind readers be so good as to give me some explanation of the following facts, viz.: On my property there is an occurrence of sandstone which has a peculiar oily smell, and the sandstone is also of a brown and yellowish tint. I would therefore like to know whether this sandstone is not an indication of phosphate.—Yours, etc.,

P. H. SCHOLTZ.

Bangor, P.O. Lucktown,
Via Vryheid, Natal.

[We cannot express an opinion without seeing the sandstone. If you care to send a specimen to this office, we will endeavour to answer your questions.—Ed., *S.A.M. & E.J.*]

Sir,—In reference to my letter of the 23rd inst. re sandstone, I have now come to the conclusion that it is nothing else but a true mineral oil indication. I do not doubt for a moment that this is so. Is it worth while to start working this new venture?—Yours, etc.,

P. H. SCHOLTZ.

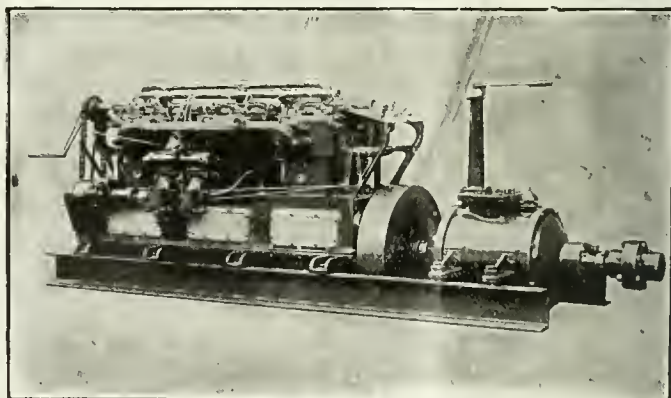
Bangor, P.O. Lucktown,
Via Vryheid, Natal.

New Kleinfonteins.

The operations of the New Kleinfontein Company's property during the quarter ended June 30 resulted in a loss amounting to £6,627. The revenue totalled £207,554 (24s. 3d. per ton), and the working costs £214,181 (25s. per ton), excluding interest amounting to £2,554. The payable footage amounted to 1,140 feet with a mining width of 55 inches and an assay value of 11.56 dwts.



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THE VAAL RIVER AND ITS POSSIBILITIES.—I.

[By W. INGHAM, M.I.Mech.E.*]

THE Vaal River rises about 15 miles north of Ermelo and joins the Orange River at a point about 8 miles below Douglas and 112 miles below Kimberley. The river is wholly within the Transvaal until it reaches the junction of the Klip River (O.F.S.) about 22 miles below Standerton, but from that point the right bank is within the Transvaal and the left bank within the Orange Free State until the river enters Cape Colony at a point about 8 miles upstream of Fourteen Streams. The total fall of the Vaal River from Beginderlyn Road Bridge which is about 80 miles above Standerton to the junction with the Orange River is about 2,000 feet, while the bed is from 60 to 100 feet wide above Standerton and increases gradually to about 800 feet at the junction below Douglas. The length of the river from the Beginderlyn Road Bridge to its junction with the Orange River is about 805 miles. The highest point of the catchment area is in the Drakensberg range in the neighbourhood of Mont Aux Sources at an elevation of about 11,000 feet above sea level. The bed of the river is composed of a number of large pools, with a series of falls between the pools. As the falls usually occur where there is hard material or rock, engineers always examine such places for dam sites. Some of the pools are several miles in length and 20 feet deep, and the depth of the river to bank level ranges from 15 to 40 feet. The total area of the catchment up to its junction with the Orange River is 73,747 square miles and the area of the principal tributaries is given in Table "A." The flow of the river varies considerably, and apart from the waterfalls the velocity ranges from nil when the river is dry to about 12 feet per second during floods in the neighbourhood of Vereeniging where careful observations have been made. The maximum flood discharge during the last 40 years at the site of the Rand Water Board Barrage was 183,000 cusecs on November 23rd, 1917, as compared with 172,000 cusecs in 1894, although the discharge at the Vereeniging Railway Bridge was higher in 1894 than it was in 1917. This is accounted for by a very heavy local fall of rain in 1917 on the 800 square mile catchment between the bridge and the barrage. The fall of the river between certain points is given in Table "G" and is also shown on the longitudinal section of the Vaal River from Beginderlyn Road Bridge to its junction with the Orange River. The largest portion of the catchment area is grazing land and only a comparatively small area is planted with trees. The chief crops grown on the catchment area are maize, lucerne, barley and wheat, the first-named being by far the largest crop. Cattle do well on the grazing lands,

but have in many cases to be removed to good winter farms in the hills for three or four months during each year owing to the dearth of good succulent grass on the farms adjoining the river during the dry season. Several kinds of fish are found in the Vaal River, the most common being silver, yellow and mud fish and barbel, while carp is common in the Rand reservoirs and trout is found in some of the clear water tributary streams. The catchment area of the Vaal is rich in minerals—gold, diamonds, coal, iron ore, lead and tin being the most common. Salt is also found in several districts, and a good revenue is derived from it. The Transvaal alone supplies nearly 40 per cent. of the world's gold output, and the coal output is over five million tons per annum and is gradually increasing owing to the expansion of the export trade. The geological formations consist of the following: About two-thirds of the Vaal River catchment area is covered by the ecca series and dwyka conglomerate of the Karoo system. This area is chiefly on the Orange Free State side of the river. The remainder of the catchment is covered by the Witwatersrand series and dolomite around Johannesburg, the Pretoria series, dolomite and Witwatersrand series around Vereeniging, the Ventersdorp system around Bloemhof and Warrenton, and the dwyka conglomerate in the neighbourhood of Barkly and Kimberley. It is a peculiarity of the left bank of the Vaal that there are large tracts of sand, whereas the right bank is fairly free of such deposits. Below Christiansburg there are considerable areas of calcareous tufa and the soil is generally very poor in such districts.

AFFORESTATION.

There are ample facilities for tree planting within the Vaal River catchment area, and as mining and building timber is, and will be, in great demand, it will well repay landowners to plant trees on land which is unsuitable for cultivation in other respects. The time required for trees to mature for providing timber for industrial purposes will range, according to locality and rainfall, from 8 to 15 years. The cost of planting, clearing, supervising during growth, cutting down and preparing for the market will be about £10 per acre, whereas the value when ready for felling will be in the neighbourhood of £30 per acre. Many farmers are unaware of the value of timber trees, and it is suggested that the Government Forest Department should circulate information with reference to this matter to all farmers within the Union. Apart from the monetary return for the trees, the fact of there being large plantations all over the catchment will tend to increase the rainfall to some extent, but the principal advantages will be obtained owing

* Excerpt from Presidential Address read before S.A.A. for the Advancement of Science.

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Bulawayo and Salisbury.

to the dry weather flow of the river being increased and the maximum flood discharge being less. This is a very important matter, for within the last few years the Vaal River has been absolutely dry at certain places between Parys and its junction with the Orange River.

RAINFALL RECORDS ON THE VAAL RIVER CATCHMENT AREA.

A table (B) is appended, which shows the rainfall at various places within the Vaal River catchment area. As, however, the records have not been observed in many cases over a sufficiently long period to give correct averages, the number of years has been stated in the third column of the table. The reference numbers in the first column locate the position of the rainfall station on the plate No. 1. A summary of the averages of each particular catchment is also given in Table C, and the reference letters are shown on the map. It will be observed that the rainfall varies very considerably over the Vaal River catchment area. For instance, the Riet River area has a rainfall of only 13.58 inches as compared with 31.8 inches for the Wilge River. These rainfalls are for fairly large areas and individual rain gauges will register falls from about 10 inches in the lower portion of the catchment to 45 or 50 inches at the sources of the Vaal. A fall of 14 inches has been recorded within a period of 24 hours at Krugersdorp and 3 to 4 inches have been recorded in an hour on several occasions in the Transvaal. The rainfall records at Joubert Park, Johannesburg, for the years 1902-1919 inclusive is shown on plate No. 4.

INFLUENCE OF TEMPERATURE UPON EVAPORATION.

Some interesting experiments were carried out under my supervision at the Village Pumping Station of the Rand Water Board in January last, to ascertain the evaporation of water at different temperatures, and the effect of such increase is shown on plate No. 3. The test was carried

out with water at its natural temperature, which was about 73° F., and also with artificial temperatures of about 83° F. and 90° F. The tanks, which were 4 ft. square, contained 3 ft. 6 in. of water, and were erected at the Village Main Pumping Station in the centre of Johannesburg. There were three tanks, one under natural conditions and the other two were heated artificially by watertight steam coils passing through the water contained in the tanks. As all other factors were common to the three tanks the difference in evaporation was due to temperature alone. The experiment was commenced on the 1st January, 1919, and the results are shown graphically on plate No. 3 for a period of 18 days. The daily evaporation, at the Union Observatory, for the same period, is also shown on the chart. Readings were taken every half hour during the 24 hours of each day, and the necessary corrections were made for rainfall. The experiment definitely shows that there is a considerable increase in evaporation as the temperature of the water increases, and the results are shown below:—

Temperature from	Daily evaporation for each 1° F. rise in temperature.
67.31° F. to 73.36° F.	0.013 inches.
73.36° F. to 82.71° F.	0.018 inches.
82.71° F. to 90.44° F.	0.023 inches.

The actual evaporation in inches during the 18 days is given below:—

Average temperature. Fahrenheit.	Evaporation in inches.
67.31	*3.280
73.37	+4.687
82.71	+7.727
90.44	+10.918

* Tank at Union Observatory (Johannesburg).

+ Village Pumping Station Tank.

It will be observed from the above figures that for a rise in temperature of about 23° F. the evaporation increased from 3.28 to 10.92 inches in 18 days. Evaporation is also affected by many other factors such as wind, humidity, etc., but it is unnecessary to discuss these factors in this paper. If, therefore, the natural temperature of a river is raised owing to water being used by power stations for condensing purposes, it follows that the loss due to evaporation in the river is considerably increased. Based upon an increase in temperature of 18° F. (72.5 to 90.5) and taking an area of one square mile of river, which represents a stretch of 11.7 miles long by 450 feet wide, the additional loss above that due to natural evaporation, is 5,338,000 gallons per day. A case in point has been recently considered in connection with the Rand Mines Power Company's station at Vereeniging, when it was clearly shown before the Parliamentary Select Committee that the extra loss from the Rand Water Board reservoir, due to condensing water being returned to the river, would be about 300 million gallons per annum if the circulating water for condensing was 18° F. higher than the natural temperature of the river water. It was also found during the investigations that the natural temperature of the river water at 9 o'clock in the morning is approximately equal to the mean temperature of the air during the day.

(To be continued.)

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the S.A. Mining Journal. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Coal Strike and Happy Ending—The Trend of Business—Iron and Steel—Rhodesian and Baltic Timber—Electrical Goods, Railage and Shipping.

The week opened badly on account of the British cable news in reference to the coal strike, but fortunately a turn for the better came and quite an optimistic feeling was shown on Wednesday. On that day quite a lot of orders came into the Commercial Exchange from the gold mines. There was little or no outstanding feature in the buying, but simply an all-round demand for sorting-up lines, both for consumable stores and machinery spares. It appears that when any mine runs short of a month's supply, then only a sufficient quantity must be ordered for the coming month. Of course in some lines the mines have even a twelve months' supply, but the present-day instructions are only a month's supply must be purchased when the time comes for that operation. Some people attribute this betterment to the accumulation of orders at the end of the month and the long Peace holidays. However, there are others who think that the Low-grade Mines Commission has done something to increase the optimism, as well as the promised increase in the value of the gold output.

THE TREND OF BUSINESS.

A London cable arrived from a partner in the iron and steel trade in Johannesburg. It said that the price of iron and steel goods was advancing, therefore he had not made any purchases at present, as values seemed to him prohibitive for the South African market; and also by the last mail letters arrived that are full of excuses for not exporting orders already on hand, and yet ships are coming practically empty when our merchants are anxiously awaiting certain classes of goods. The idea prevailing among the merchants is that through lesser quantities of goods coming from Great Britain the prices in America are quietly advancing. This has enabled merchants in Johannesburg to firm up values of the general run of stocks held by them, not much perhaps so far, but sufficient to indicate the trend of business and values. It is a fact worthy of mention that three stands, giving an area of 100 by 100 feet, at the corner of Commissioner and Loveday Streets, have been purchased by a London insurance company for £55,000, which is certainly a feather in Johannesburg's cap as an indication of what outsiders think of our prospects, especially as this represents the value of the stands, as it is understood that the present one-storied pioneer buildings will be removed and a palatial edifice erected.

IRON AND STEEL.

There was a line of steel plates sold about a fortnight ago at £30 per ton and recently unloaded at £45 10s. This is said to be a sure indicator that all steel is advancing in price. In this connection our exchange with America, which is against us, represents about £5 a ton advance c.i.f. Durban, and naturally this has to be added to the cost. Large inquiries for imported mild steel in all sizes are being made, and a fair amount of business has resulted in consequence. A special reason for this is that a municipality has put a restriction in its application for tendering that imported mild steel has to be supplied. The municipality in question is doing some manufacturing, which is one of the reasons for the restriction in question. When the manufacturing is over perhaps the restriction will be re-

moved, but there it is at present. The imported article is 37s. 6d. to 45s. per 100 lbs., and the larger sizes 35s. Baling wire, which at one time was 50s., is now about 22s. per 100 lbs. Drill steel, 10d. a lb., which is almost the only standard price to-day, as all the other quotations are fluctuating. One manager remarked that it seldom happened that he could go through one day without some alteration in his list of prices.

RHODESIAN AND BALTIC TIMBERS.

It is not generally known that Rhodesian timber is making such headway by supplying the Union of South Africa. The representative of the Rhodesian Native Timber Concession is represented by Mr. H. B. Black at 50 Meischke's Buildings, Market Square, where he is pleased to see inquirers and those interested in the building and furniture trades; but it must be borne in mind that he only supplies recognised timber merchants, and the following are the wholesale prices to them. He has been eighteen months there, and during the past twelve months he has increased the distribution of business quite fourfold. Teak deals, 3in. by 9in., 8s. 9d. a cube; mahogany logs of round timber, 100s. per ton; walnut or mukwa is 6s. 9d. a cube white, and 15s. brown. This is said to be equal to Indian teak and takes an expert to tell the difference. Syringa for wagon building and guide blocks is 10s. 6d. a cube. Certain firms have given a very favourable report on same for guide blocks. Stinkwood for wagon building is also the same price. Mongoma shelving, 12in. by 1in., 9d. a foot. Teak for sleepers, impervious to water, is 8s. 9d. a cube, all delivered in Johannesburg. The railway charges are somewhat of a handicap on this Rhodesian timber, as the dead size from Bulawayo costs 3d. per foot, and similarly 12ths from Durban. The factory at Vungu, near Bulawayo, makes windows, doors and the more common parts of furniture, such as table legs, etc.; also they cut timber suitable for furniture in standard lengths and

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so forth. They also make fencing gate-posts, and altogether it seems that this industry and product has made great strides in Johannesburg since its inception. Perhaps one thing must be mentioned above others is that the hardwood deals are said to make excellent flooring, capable of taking a fine polish and so saving oilcloth and carpets if necessary. The Baltic timber is about the same, viz., deals 1s. 6½d., 1s. 7½d., floorings 8½d. to 8½d., ceilings 6½d. to 6½d. As regards galvanised roofing iron there is practically none in town; the price is nominally 1s. 3d. to 1s. 4d., and supplies are expected immediately after the holidays. Business is quite good so far as Johannesburg is concerned. Second-hand timber is fairly plentiful, but as the demand is good prices are inclined to appreciate. Second-hand iron, similar to the new proposition, is very scarce for rainproof material. It is rather an extraordinary thing that a consignment of second-hand pitchpine logs has been sent to Port Elizabeth at quite a good price. This is a sure indication that pitchpine, presumably for the seawater piles, must be very scarce at the coast.

ELECTRICAL GOODS.

Prices in electrical materials remain much about the same as last reported, but with regard to lamps these have receded to 2s. 9d. and even to 2s. 6d., and it is generally expected that they will see a yet lower figure early in August. Country orders are fairly good. As already reported, stocks have already arrived in Johannesburg, but through some irregularity as regards declarations respecting duties only a portion of the consignments have as yet been delivered to consignees.

RAILAGE AND SHIPPING.

Complaints are made at the dislocation of trade through the railway authorities making such big margins in dates for the despatch of material, so much so that one merchant

stated no goods from Port Elizabeth would be accepted from July 26th to August 6th, and other towns according to distances. This railage and freight question seems to have come into the trading world quite unexpectedly, as it is said that the South African trade is quite upset in Liverpool and other places through the dock strikes and coal shortage.

Rooiberg Minerals.

The report of the Rooiberg directors for the quarter ended 30th June, 1919, states:—Ore treatment: Days (24 hours) worked: Mill, 17'65; treatment plant, 84'62; ore from mine crushed and treated, 1,871 short tons; stock slime and sand re-treated, 3,103 short tons; concentrates produced, 64'3 long tons; average assay value of concentrates, 64'14 per cent. M.T. Revenue and expenditure: Estimated revenue, £7,828; expenditure, £15,092. In accordance with the announcement made in May last, the mill was closed during that month, since when only stock slime and sand have been treated. The total ore accumulated at 30th June, 1919, for crushing at a later date is 2,350 tons.

Transvaal Estates New Colliery.

The report of the Transvaal Estates and Development Company for 1918 states that income and expenditure account permits of £28,961 being carried to the balance sheet, after provision has been made for depreciation and reserves. The special reserve account opened at the beginning of the war has now been closed and investments figure in the balance sheet at cost or at market price on 31st December. A dividend (No. 3) of 6d. per share, free of income tax, has been declared. Four town stands with buildings were sold for £1,350. Thirteen farm properties the total extent of which was about 70,000 acres, were disposed of, mainly for ranching purposes, for £20,585. The land thus alienated consisted to a large extent of outlying bushveld from which no revenue has hitherto been received. Similar sales to the extent of about 65,000 acres have so far been effected during the present year and further transactions are pending. Partly owing to transport difficulties, and more recently to the absence of demand for the particular variety yielded by the mines on the company's property, the production of asbestos was suspended throughout the greater portion of the year, and it has not as yet been resumed. The deposits have, however, been favourably reported upon by the Mines Department, and it is hoped that means of communication will shortly be improved. Fourteen holes have been drilled on the farm Bronkhorstfontein, and the existence of valuable seams of coal over a certain area may now be regarded as fully proved. Drilling is being continued in order to ascertain the extent of the deposit and to determine upon the best position for the working shafts.

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Notes and News

Pot Clay Deposits at Boksburg.

We understand that the valuable clay deposits at Boksburg are being developed for the production of the better classes of goods. Previous to the war samples of the clay were sent to Germany for analysis and report, and for insulators and other high-class goods the clay was found to be most suitable.

* * * *

Shortage of Locomotives.

There is a continued shortage of locomotives at the coast ports. Only a few days ago at Delagoa Bay there was a demand for 7,000 tons of coal, but only 1,300 tons were available in consequence of the shortage of locomotive power to convey the coal from the Transvaal mines to the coast.

* * * *

World's Shaft-Sinking Record.

In his interesting paper upon the advantages of circular shafts, which was read a few months ago at a meeting of the South African Institution of Civil Engineers, Mr. H. Stuart Martin gave the following details with reference to a splendid piece of work at the No. 15 shaft, Crown Mines, during the month of December, 1918. Diameter 21ft. 6in. (20 feet in the clear):—During 31 days, 279 feet were sunk. Costs taken over 30 days (270 feet) totalled £13 4s. 8d. per foot. These costs include the whole of the station cost—walling only excluded. The average tons hoisted per blast was 90=8'100 tons for 30 sinking days, three blasts per day. An average of 31 natives per shift in shaft per day—93 boys. White men in shaft—Leading hand sinker, 1 per shift, 3 per day; second hand sinker, 1 per shift, 3 per day; stagemen, 1 per day; master sinker, 1 per day. Total in shaft per day, 8. Total other whites employed on surface—Engine drivers, 3; boilermen, fitter blacksmith, machine men and masons, workshops, etc., 9; grand total, 20. Surface boys—attendants, Total explosives used=15 lbs. per foot sunk. Machines: 4 Holman Torpedo Sinkers; 2 Holman Jack Hammers. A depth of 279 feet sunk in 31 days constituted then the world's record for speed in sinking, covering all forms of shaft. This shaft-sinking record has again been broken at the same shaft, the footage accomplished for the month of July, viz., 31 days, being 310 feet. The total tonnage of rock hoisted for the 31 days amounted to 10,134 tons. This work was carried out under the supervision of Mr. Ivor Rees, who previously held the world's record for shaft-sinking as detailed above. In this last instance also the rock drills used were the Holman Sinker and Holman Hand Hammer.

* * * *

Supplies of Capital for Industry.

The General Manager of the National Bank of South Africa, Ltd., Mr. E. C. Reynolds, has published recently a statement in the Government *S.A. Journal of Industries*, which is of the greatest interest at the present time. He writes with great authority and anticipates for this country an enormous increase in its activities, beyond those which at present prevail. He discusses the methods by which Germany made such great advances in the industrial world, and whilst he deprecates what we prefer to call the "bolstering up" process by means of State-aided financial institutions, he advocates following the German methods in all the great departments of production, viz., those of research, analysis, synthesis, scientific and orderly economic methods. The financial organisations in Germany closely examined into every detail of the new business before advancing a single mark for the development of new business. It is possible that those who want financial assistance will resent this, but it certainly must be done if success is to attend the new employment of banking facilities. There is undoubtedly, in our opinion, an enormous scope for the employment of labour upon the production of all those cheap goods which are known as "kaffir truck," but all such and similar operations must be supervised by those who have a practical acquaintance with methods of production, rather than a close and singular experience in "official routine."

The new Industrial Bank will doubtless give attention to this matter. Mr. Reynolds sums up the situation very correctly when he says: "A promising field for industries exists in Africa south of the Equator; the men to handle such are available; there is sufficient local capital at hand to finance industries, but the allocation of it is almost entirely at the will of private owners; an 'atmosphere' of industrial investment will have to be cultivated to induce such owners to participate in the undertakings we are discussing; careful preliminary investigation, the total avoidance of 'watered' capital, and sound management are essential before the public can be expected to come in. Much will depend on the fiscal policy adopted by the country as to whether the products of some of the new industries will be able to compete with those of older manufacturing countries, but those already established should be able to face the future with confidence."

What is a Factory?

The new Factory Act now in operation states that a factory is "Any premises where steam, electric power or mechanical power is used in the making of anything for sale. Any premises which, not necessarily falling within the foregoing definition, yet employ three people on whole-time work for the manufacturing, preparing for manufacture, or packing of any article for the purpose of gain." Every employer whose establishment falls within one or other of these definitions must make it his business to register, and the first step in the procedure is to apply to the office of the Factory Inspector for a form. In addition to this the owner of the factory will be required to forward a sketch plan of his premises, or if there be more than one floor, a sketch for each floor. If the premises do not comply with the conditions laid down in the Act, the owner will be ordered to make alterations accordingly, and when the Inspector is finally satisfied that the Act is being complied with, registration will be granted. The period during which factories must be registered has been extended for six months—until October of this year.

Coal By-Products.

In view of the fact that the Tweefontein Colliery directors have authorised Mr. F. Simon to make an extended study of by-products plant in England, and are also taking steps for the establishment of a large plant at Minaar, the paper read by Dr. F. M. Perkin is of great interest. In it he says (when he addressed the Institution of Petroleum Technologists) that although the British Government had been pressed during the war to give facilities for testing various retorts to ascertain which would be the best for producing oil on a large scale from coal, it had approached the gas works instead and asked them to produce the fuel oil. This could not be done, except in the form of creosote, at the same time as the toluol and benzol which the Government required. A process had been worked out, however, for steaming on vertical retorts, and a fairly good fuel oil had been produced. Retorts had been adapted at Nottingham, Dundee and Bradford, and the total quantity of oil recovered at these centres was 1,845,000 gallons. Nottingham plant in seven months produced 945,000 gallons, and the others, in 2½ months, 150,000 gallons each. The average cost of materials treated was 25s. per ton, and the average amount of distillate recovered was stated to be 30 gallons per ton of material, which made the cost of the oil 1s. per gallon exclusive of labour and operating charges. Another point was that the coke was rendered practically valueless by the action of the superheated steam on the free carbon.

Rhodesian Prospecting.

At the annual meeting of the Rhodesia Chamber of Mines the President said: "I called attention in my address last year to the great lack of prospecting then going on in the country, and to a resolution passed at the second mining conference urging the British South Africa Company to finance a scheme for the encouragement of prospecting on the following lines, viz.: 'That bona fide prospectors be

assisted by the free issue of necessary mining supplies, or by credit notes to be honoured by storekeepers, to provide for their own and boys' food, the total grant not to exceed £15 per mensem, and to be paid each month on receipt of a report giving the prospector's movements and work done.' Mr. Olive, on behalf of the Commercial Branch of the Company, said that he would be pleased to collaborate with the Administration with regard to the proposal made with which he was in sympathy; and in opening the Conference the Secretary for Mines stated that he was authorised to say that any concrete considered scheme which is approved by the mining industry will receive the greatest sympathy and the greatest consideration from the Government, and that the Government look to the industry to help them in this matter. Well, gentlemen, the resolution was passed unanimously by the Conference, but I regret to say that so far as we are aware, the British South Africa Company has done nothing in the matter, and the position of prospecting for fresh mines in this territory is probably worse than ever."

The Port of Beira.

The port of Beira is to a very great extent dependent upon the transit trade to and from Rhodesia for a large proportion of its prosperity. The transit trade of Beira is served by Rhodesia as far as Bulawayo, and also by the Belgian Congo. As railways develop, another port may be found to handle the exports of the Belgian Congo, but Beira must always be the natural port of Rhodesia. It has a population of about 393,000 all told in the territory governed by the Companhia de Mozambique. Of these about 2,000 are white, 1,500 Asiatics, and the remainder natives. The white population are largely employed by the Government or railways; a certain number are engaged in farming or mining. The native population supply the labour for the mines and farms, and, as in the Union of South Africa, the supply does not equal the demand. So short was the supply of labour for reaping the last mealie crop that many British farmers were obliged to bring boys from Rhodesia, at considerable cost and difficulty. The average wages for a native in Beira are from 30s. to 50s. per month, and in the country about 15s. per month. On the mines the native pay is considerably higher.

Beira District Mining.

At Inebopa, about 160 miles from Beira, tin has been discovered in paying quantities. At present the development of the work is in its elementary stages, but the prospects are good. Copper is being worked at Edmundian, near Umtali. The working of these mines is in the hands of a syndicate. In 1913, 4,816 tons of copper were obtained. In 1917, 307 tons, and in 1918 207 tons, were exported. The prospects for 1919 are good, and it is estimated that the mines should produce 80 tons per month. Up to the present the ore has been sent to Rhodesia for treatment. A new plant is, however, nearing completion, which will enable the syndicate to deal with the ore at Edmundian. In what is known as the Macequece Gold Belt, a considerable number of small mines are being worked for gold. At present the gold is chiefly obtained from surface washing. All rock and streams in this region bear traces of gold, and it is probable that a great future still lies before this district. The largest mine now working is the Andrada Mine. Although no coal is being worked in the territory, it is certain that coal exists, though in what quantity has not yet been ascertained. It is said that a coalfield exists about 130 miles from Beira towards Chindio on the Zambezi. Should this prove to be correct, the time may come when Beira develops into a bunkering port of note.

Our Mine Surveyors.

In consequence of the Peace celebrations, Professor Yates postponed the opening of his survey class. This much-needed class will open to-day, and in view of the inconvenience and embarrassment the mines have of late suffered owing to the great scarcity of qualified surveyors, it is a relief to know the matter is being taken up by such able hands. In this new departure the professor will have the assistance of Mr. H. G. S. Loxton.

TOPICS OF THE WEEK.

THE COLOUR BAR.

THE inclusion of a plea for the removal of the "colour bar," or colour disability, in the suggestions for the betterment of the Witwatersrand gold industry which have been made to the Low-Grade Mines Commission opens up a very much larger problem than is immediately involved in the proposal. It brings to the front again the whole question of the present and future status of the South African aborigine in the country of his birth. When the events of the past few years are considered, and when it is remembered that the natives of this country have organised for the purpose of obtaining what they regard as their natural rights, it will clearly be perceived, no doubt, that the general movement of these natives to overcome the obstacles that stand in the way of this advance is one that cannot wisely be resisted. The example and teaching of our white workers, the spread of education and the official recognition of their claims and grievances which is to be found in various blue books and Government reports have served to justify and to give impetus to a cause which has always possessed at least some measure of moral and political sanction. In this matter of the colour bar, as far as it relates to skilled work which is not difficult nor of a complicated kind, such as that of mining, we find ourselves confronted by a condition of things which prevents even the earliest steps in the social and material advancement of the native. If the progress of the South African aborigine is the inevitable fact which all thinking men believe it to be, it follows as equally certain that the right to work according to their capacity and ability which is a first essential in the upward movement of the black race will of necessity be the first object to be achieved. It has already been secured in territories adjoining the Transvaal. "Under the present mining regulations certain positions of responsibility must be filled in the Cape and Natal," says the Report of the Commissioner on the Native Grievances Inquiry 1913-1914, "by a 'competent' man, whether white or coloured. In the Transvaal and Free State they must be filled by a 'white' man, whether competent or incompetent. . . . In the course of this enquiry I have met educated natives employed on the mines, who have brought forward grievances peculiar to their class. These all resolve themselves into one—absence of opportunity to do the work for which their education has fitted them, and thereby to earn sufficient to maintain them in the state of civilization which they have attained. Some of these natives were extremely sensible, well-mannered and well-reasoning people; and they complained bitterly that they were, for all practical purposes, classed with raw savages." The only objection that can be made to this desire for improvement, apparently, is that propounded by Mr. John Joseph Ware in his interesting dialogue with Mr. Whiteside, on the subject of native labour and other matters, before the Mining Industry Commission of 1907. "Assuming a case on the part of an employer," said Mr. Whiteside, "that, for reasons of his own, he wants to bring natives forward, I understand that you would meet that by legislation to prevent him and to protect white men in that respect?" "Yes; if we want to make this a white man's country we have to do it." Mr. James Ernest Riley, President of the Trades and Labour Council, also referred to the desirability of making the Union a white man's country and a home in a British Colony for white people. He took up the attitude in a general sense that "if we go down to the root of the whole question, it is a case of who can survive best under the present conditions, and if we accept the conditions as they are, on a competitive basis, the Kaffir, or the coloured worker, can survive the white worker on account of his requirements being less than those of the white worker." To put the matter into a nutshell the "colour bar" is a measure which is intended to ensure, as far as may be, the supremacy of the European element in South Africa. Speaking frankly, however, it seems a weak policy in view of the fact that it is morally unjustifiable and one that cannot, in the circumstances, be

long maintained. This conclusion, which can scarcely be disputed, leads us back to the statement that was made at the beginning of this discussion, namely, that the removal of the "colour bar" opens up a very much larger problem. Hitherto its maintenance has served to push wider considerations into the vague realms of the future, but it will probably fail to do so very much longer. Are we to put up a half-hearted fight for a discredited principle, or shall we set about the inevitable task of dealing comprehensively and definitely with the much bigger question that will become more difficult to deal with the longer it is so carefully ignored.

Planet-Arcturus Gold Mines.

The report of the Planet-Arcturus for the year to December 31 last states that, in accordance with the authority given to the directors at the extraordinary general meeting of shareholders held on October 2, 1918, the Slate and Arcturus Mines have been let on lease to the Gold Fields Rhodesian Development Co., Ltd., who have commenced the necessary work of unwatering and re-opening these mines and continuing the sinking of the main shaft, in addition to which the preliminary work for the construction of a light railway from Ruwa siding to the mines, a distance of 13 miles, has been commenced. Apart from these steps there is no information of importance to communicate up to the present date. With regard to the Planet Mine, the tributaries ceased crushing operations at the end of September last, owing to unfavourable developments in depth, and since that date they have been re-treating the accumulated slimes on the property, which, however, will be exhausted in two or three months' time. The ore treated by the tributaries during the year 1918 was 7,078½ tons, from which and from the slimes royalty to the amount of £2,799 was obtained.

* * * *

Portuguese East Railway Developments.

At present only one railway line has been constructed in the Beira district, running from Beira to Macequeze and Umtali, called the Beira and Mashonaland Railway, and operated entirely by British employees. Another railway is, however, about to be constructed. It will link up the Central African Railways with Beira, and will be constructed from Chindio on the Central African Railways to a point on the Beira and Mashonaland Railway about 20 miles out of Beira. The total distance will be about 200 miles, and the survey has been completed. The gauge is to be 3ft. 6in., the gauge common to all the South African Railways. As at present the Beira and Mashonaland Railways as far as possible obtain all their supplies in the United Kingdom, it is probable that all materials required for construction and the necessary rolling stock for this new line will be obtained in the United Kingdom also. The line presents no abnormal difficulties, excepting the bridge over the Zambezi, and the estimated time for construction is two years. One of the effects of this line will be that, although Morromou will send its sugar to Chinde by the Zambezi River, Sena and all the factories in that district will certainly despatch their sugar by rail. Instead of loading sugar at Sena, transshipping it at Chinde, and possibly again transshipping it at Beira, the sugar will be railed to Beira and shipped to its destination. There is also a possibility, though no survey has yet been made, that a railway will be constructed from Melsetta to Villa Perry. Should this line be constructed, a large area of farming land would be opened up. A plan has been passed, and the work is to be executed immediately, for deepening the lighter Channel so that lighters can approach the wooden jetties at all states of the tide to load or discharge cargo. A very great saving in time will ensue from this work, as at present at low tide work is almost at a standstill. An ambitious scheme is at present before the Beira and Mashonaland Railway Board, i.e., the construction of a solid masonry wharf for ocean-going vessels. The construction of this wharf will play a large part in the future development of the port of Beira.

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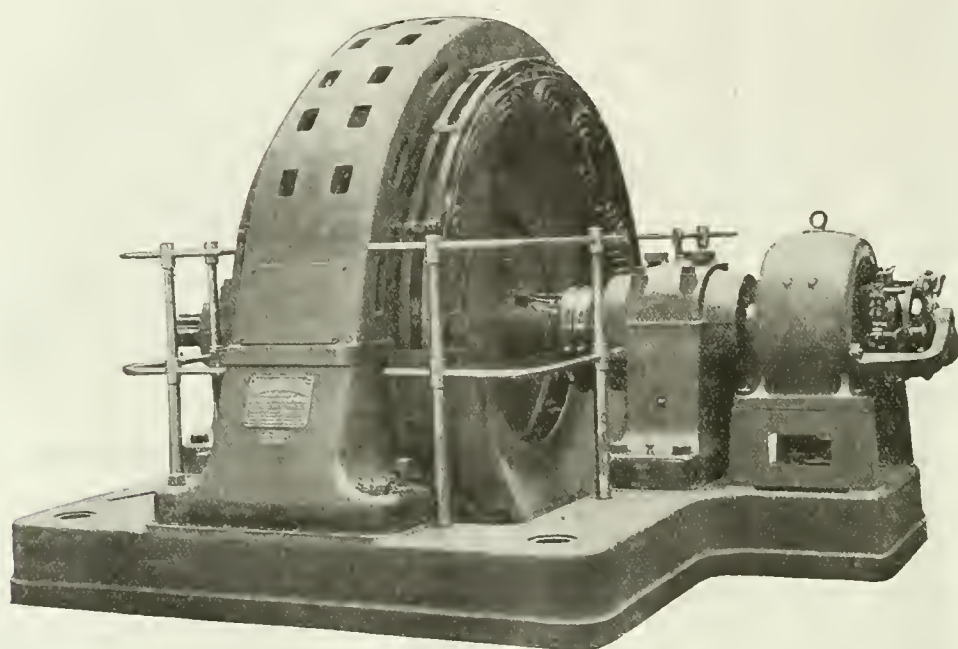
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ECONOMY OF MACHINE STOPING.

Operations on a Narrow Tin Lode—Some Interesting Facts and Figures,

We have consistently advocated the use of machine drilling wherever possible, and the following notes written by Mr. Cyril W. Gudgeon, manager, Mount Bischoff Extended Company, Waratah, Tasmania, and published by the *Chemical, Engineering and Mining Review* will be of interest. The notes illustrate the advantages to be derived from the application of machine stoping on a narrow lode, against hand labour stoping, and are of interest in that the lode covered by these notes, the Giblin lode of the Mount Bischoff Extended Tin Mining Co., N.L., Waratah, Tas., has only averaged 19.5 in. in width over the last five years' work, on an extraction of 65,881 tons of ore. The lode has an average dip of 35 deg., but is variable from nearly flat to vertical. It is enclosed between hard walls of slate, altered-slate, porphyry, and quartzite rocks, and with depth both the ore and the enclosing rocks are increasing considerably in hardness, with a tendency of the ore to "freeze" to the hanging wall, a condition not conducive to low costs. Machine stoping is carried out by the C.C. H. Ingersoll-Rand telescopic drill, using 1½ in. cruciform steel, with an X bit. Five machines are kept at work continuously. The air pressure is 90 to 85 lbs. at the point of delivery. The machines are only running in the No. 6 section where the harder ore is in evidence, all stoping above the No. 5 level being done as yet by hand labour. Stoping operations consist of ordinary flat-back, overhead stopes, and shooting down to sorting floors for the separation of the coarse waste rock from the ore. The operating statistics covering underground work of recent years are as under:

Period ending—	Tons ore per shift stoping.	Tons ore per shift tramming.	Advance feet per development shift.	Av. width of lode stoped over.
1914, September ...	1,216	2,473	356	24 in.
1915, March ...	1,800	3,140	481	21 in.
1915, September ...	1,920	3,340	614	23 in.
1916, March ...	1,900	3,850	630	17 in.
1916, September ...	2,010	3,670	620	20 in.
1917, March ...	1,950	3,440	810	21 in.
1917, September ...	1,890	3,450	790	18 in.
1918, March ...	1,720	2,570	700	14 in.
1918, September ...	2,050	2,780	1,020	17 in.
1919, to date ...	2,102	2,940	908	not available.

The foregoing figures make no allowance for the increasing hardness of the whole of the mine ore, the 44-hour week as against the 47-hour one, or the size of the lode. Allocating the respective shifts to the machine and hand stopes, against the tonnage yield, the position is:

	Average yield per man-shift, hand stope.	Average yield per man-shift, machine stope.
1918, September ...	1,518	2,278
1919, February ...	1,239	3,151

This indicates an increasing efficiency of the machine miner and a decreasing result from the hand labour. Under hand labour conditions a stope is taken 4 ft. in width to allow of reasonable working conditions, but under machine stoping a width of 2.5 to 3 ft. only is allowed, whereas in the majority of stopes the lode does not exceed this width. In 1915 the hand labour miner averaged just on 8 ft. of

boring per shift, whereas now 6.87 ft. represents the shift's average as against the machine average of 28.543 ft. per shift, a comparison that does not quite represent the position, allowance having to be made for the additional hardness of the ground in the machine section. The yield per foot of boring is: Hand steel, 37 tons; machine steel, 22 tons, showing the hand-boring in a small lode to be more efficient per foot-ton. In one other respect the hand steel has an advantage over the machine breaking, in that owing to lighter shooting, with less shattering, more sorting can be done underground, and done quicker and cheaper, with a cleaner ore delivery to the mill. The machine stopes yield a greater tonnage from the same area, owing to an admixture of the additional rock, slightly lowering the grade. Expressed in figures and taking averages, to obtain a ton of tin oxide of 70 per cent. Sn, requires: Hand stope, 84 tons of crude-ore; machine stope, 100 tons of crude-ore.

The cost per ton, broken, sorted and delivered through the crusher station to mill bin, without any allowance being made for the great difference in the price of materials and labour, in the all hand steel days, compared with the combined hand and machine stoping of the present is as under:

	1916, All hand, per ton.	1918-19, Hand and machine, per ton.
Supervision ...	1.38d.	4.42d.
Stoping ...	6.262d.	7.240d.
Tramming ...	2/3.92d.	2/8.85d.
Delivery ...	11.53d.	10.01d.
Total ...	9.10.45d.	11.1.68d.

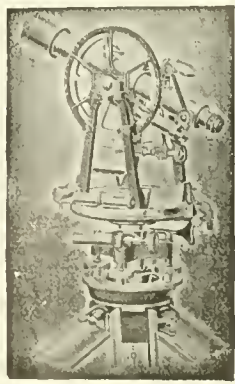
The wages paid and conditions being:

	1916.	1919.
Miners ...	10/6	11/6
Truckers ...	9/1	10/0
Hours (per week) ...	47	44

Allocating the stoping costs existing at present, the cost by comparison, per ton, is as under:

	Labour, per ton.	Materials, per ton.	Total, per ton.
Hand stope ...	12 0/97	0 9/29	12 10/24
Machine stope ...	5/8.25	1/6.13	7 2/38
Combined ...	9 2/26	1/11.42	11 1/68

The cost of mining and delivering into the mill bin one ton of recoverable tin oxide (70 units) on average grade ore is thus: Hand stope, 84 tons, £52 19/9; machine stope, 100 tons, £35/19/10.



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RHODESIAN MINING IN 1918.

General Review by the President of the Rhodesian Chamber of Mines—Gold, Base Metals and Minerals.

The following particulars, given at the last annual meeting of the Rhodesian Chamber of Mines, will be interesting in connection with the gold production during 1918, viz.:—1,966,974 tons of ore were crushed as against 2,598,505 in 1917, being a decrease of 631,531. 876,705 tons of sands were treated as against 1,358,065 in the previous year, being a decrease of 481,360. 492,300 tons of slimes were treated as against 427,924 in 1917, being an increase of 64,376. The total yield of gold was 631,357·89 fine ozs., valued at £2,652,250, as compared with 834,231 ozs., valued at £3,495,391 in 1917, a decrease of 202,873 ozs. and £843,141. Of this decrease Matabeleland is accountable for £432,127, or 51·25 per cent., and Mashonaland for £411,014, or 48·75 per cent. The gold production for each Province was as follows:—Matabeleland, 330,345·89 fine ozs., £1,382,488; Mashonaland, 301,012 fine ozs., £1,269,762. The average value per ton milled in Southern Rhodesia in 1918 was 26·96s. as against 26·90s. in the previous year. The total number of gold producers in 1918 was 403, of whom 11 were producers of alluvial. The corresponding figures for 1917 were 466, of whom 23 were alluvial producers. The monthly average number of producers for 1918 was 153 compared with 205 in 1917. Twenty of these were large companies producing £1,880,821 as against 23 in 1917, who produced £2,333,811. The monthly average number of tributors and small workers was therefore 133, producing £771,426, as against £1,161,580 in 1917. The production of the large companies was equal to 70·91 per cent. of the total output as compared with 66·76 per cent. in 1917. That of the tributors and small workers was equal to 29·09 per cent. as against 33·24 per cent. in 1917. The average number of stamps in commission in 1918 was 755 as compared with 989 in the previous year.

OTHER MINERALS.

The total production of all other metals and minerals than gold in 1918 was £804,070 as compared with £1,143,944, being a decrease of £339,874. The following details comparing 1918 values with those for 1917 will be of interest:—Silver, 1918 £29,823, 1917 £26,619; Copper, 1918 £299,321, 1917 £414,448; chrome iron, 1918 £134,857, 1917 £327,347; coal, 1918 £164,851, 1917 £179,588; asbestos, 1918 £158,684, 1917 £189,890; wolframite, 1918 £1,708, 1917 £2,070; antimony, 1918 £338, 1917 £330; ironstone, 1918 £794, 1917 £661; arsenic, 1918 £7,677, 1917 nil; scheelite, 1918 £3,699, 1917 nil; barytes, 1918 £88, 1917 nil; diamonds, 1918 £2,230, 1917 £2,991; total, 1918 £804,070, 1917 £1,143,944. It is very noteworthy and most encouraging that two important new minerals contributed to the total productions in 1918, viz.: arsenic to a value of £7,677 and scheelite to a value of £3,699.

DECREASE IN PRODUCTION.

It is a matter of regret to have to record a decrease in the total mineral production for 1918 of no less a sum than £1,183,015 as compared with the previous year. This amount is made up as follows: Gold, £843,141; all other metals and minerals, £339,874. The first reduction in the gold output of this country since its commencement on a permanent basis in 1898 occurred in 1917, when there was a drop of £399,920 compared with the preceding year. Up to that time the industry had been continuously progressive. One of the causes contributing to the decrease of the gold output was, of course, the influenza epidemic, and although it is difficult to arrive at exact figures in a matter of this kind, it is estimated that during the months of October, November and December this disease was responsible for at least £200,000 of the total decrease. Taking the five largest companies alone, the reduction of the gold output for those three months as compared with the previous nine months

of the year, was approximately £140,000. There still, however, remains the large sum of over £600,000 in the drop to be accounted for, and I venture to put forward the following facts as at any rate some of the causes operating against the industry during the year, viz.: (1) Mines closing down from natural causes; (2) no large fresh mines and very few small ones being opened up; (3) increased cost of mining stores; (4) increased cost of white wages; (5) increased cost of realisation of gold; (6) shortage of coal supplies. As regards the decrease in the production of all metals and minerals other than gold, viz.: £339,874, this is all the more to be regretted, as in 1917 there was an increase of £209,551 as compared with 1916, and it was hoped that this increase would become progressive. It is worthy of notice that all the principal metals and minerals other than gold, such as copper, chrome iron, asbestos and coal showed decreased productions as well as decreased values. The epidemic must certainly be held responsible for a considerable portion of the decline, estimated approximately at £50,000, as also must the following reasons, viz.: the floods in the early part of the year on the Beira-Salisbury railway, involving, *inter alia*, the destruction of the Odzi bridge and thus preventing the transportation of a large tonnage of chrome iron and asbestos for some months. The restriction of shipping facilities also militated against the export of copper, chrome iron and asbestos. When we realise that this falling off of nearly a million and a quarter pounds represents a decrease of 25 per cent. of the previous year's output of the country, and that fully 80 per cent. of the gross output is estimated to be spent in Rhodesia, we are bound to recognise that this serious decline in the spending capacity of the people must make itself felt in all branches of business until such time as the industry can reassert itself. That it will do so we are confident, for apart from the decrease due to influenza, most of the causes I have enumerated can be classified as the result of the war. When, however, this desirable state of the industry will eventuate it is hard to say. There would appear to be at present no signs of a fall in the prices of stores and materials, and it may yet be some time before the articles resume their pre-war cost.

GRAND TOTAL.

The grand total of gold produced in Southern Rhodesia from the commencement of the industry to the 31st December, 1918, was £42,728,293, and of other metals and minerals £5,465,671, making a grand total value of mineral production of £48,193,964.

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THE KALAHARI PROBLEM.—I.

Another Light Upon an Important Subject—The Question of Afforestation as a Climatic Factor.

[By AUGUST KARLSEN.]

THE very interesting articles of Professor Schwarz on the lost lakes have revived interest in the Kalahari problem, and we are certainly greatly indebted to him for having succeeded in arousing interest in this great problem among a number of influential persons, including members of the Imperial Government and of the Government of South Africa. The problem has been dormant for 70 years—since the time of Livingstone and Anderson—except in the German mind, and it is now most essential that it should be kept alive. As it has occupied the mind of the writer for a number of years, and since he was the first to treat the whole subject from the engineering point of view, he may perhaps be allowed to criticise Professor Schwarz's scheme and to point out where this scheme entirely fails. Other urgent work has prevented this publication of his conclusions, but now that Peace has been signed and the Union of South Africa has been appointed mandatory of the South-West African Protectorate, it is most essential that everybody in South Africa should unite to push this great scheme forward, which, in spite of the criticism against it, is the future climatic and political salvation of South Africa. Professor Schwarz has possibly looked at this problem from a too exclusively geological point of view and overlooked many very important questions which concern the future of South Africa. Briefly, his theory is that by the disappearance of the great lakes, which at one time no doubt covered the north of the Kalahari, South Africa, from Angola to the Cape, is gradually drying up, and that by filling up again the remnants of these lakes—Etosha Pan, Makarikari and Ngami, the last to the level found by Livingstone and Anderson in 1850—the climate would again be improved. Without going into details of the possibility of filling one lake or another, or of the existence of the spillways from the Okavango or Cunene rivers, which are able to carry a considerable amount of water, we will first consider if other such lakes warrant Professor Schwarz's theory.

EVIDENCE FROM OTHER REGIONS.

The Etosha Pan has an area of 1,510 square miles, and the lake Ngami of Livingstone was said to have a circumference of 70 miles, representing a maximum area of 400 square miles. The Makarikari depression is given by Professor Schwarz as covering 15,000 square miles, but the maps show only 2,200 square miles, and this last is a salt pan. Professor Schwarz says that 20 feet depth of water in the Etosha Pan will double the area, but is there enough water to fill it even to a depth of 10 feet as a permanent lake? Neither of these is, therefore, a big lake. Near the swamps north of Ngami is the town of Tsaw with 5,000 inhabitants, which we could not very well drown. Could these small lakes really have an influence on the climate of a whole continent? From the Caspian Sea, with an area of 140,000 square miles, the prevailing wind in summer is to the east and south-east, and the Transcaspian territory is practically a desert. The case is the same with the great lake Aral in the middle of a desert. The north coast of the Black Sea, moreover, has a rainfall of less than 10 inches. In winter the prevailing wind from the Persian Gulf is to the south-west, or over the Arabian desert. In July the south-west monsoon of the Indian Ocean blows up the valley of the Indus and over the Indian desert. From the Mediterranean Sea the wind blows over Egypt and Tripoli during both winter and summer and, while the rainfall in the north of the Delta is 8 inches, it is reduced at Cairo, 100 miles from the sea, to 1 inch, and the temperature at Cairo in July is 100° F. From the Great Salt Lake of Utah, with an area of 2,800 square miles, the prevailing wind is to the south, or towards the driest part of the United States. Lake Tschad has an area of 8,000 square miles, and in the summer, when the rain falls in the Sudan, the wind is to the north-east. The rainfall drops over the lake itself from

over 40 inches to 20 inches, and the Steppes of the Sahara reach the north shore of the lake. The Okavango River evaporates to-day in the great swamps between Papa Falls and Ngami and the Kalahari is still there. A lake may produce moisture but evidently something more is required and that is condensation of the vapour carried by the clouds and also the formation of these clouds. In Australia electrical waves are thrown out in the air to neutralize the positive electricity of the clouds. Mr. C. K. Hall, in *The Farmers' Weekly*, proposes simply to throw out dust from the negatively electrified earth over the clouds by means of aeroplanes and thereby to obtain the same effect. The positively charged particles of moisture would then no longer repel one another but unite and condense to rain. Parahails, provided with a radioactive substance at the points of the conductors, would also have a similar action, if the air were moist. Experience in the Dordogne, with a very small number of parahails, certainly gives an indication that former violent thunderstorms have been changed to slow rains.

OCEAN CURRENTS AND ICE.

The rainfall and climate of South Africa are directly or indirectly governed by the monsoon of the Indian Ocean, by the warm Mozambique current, and by the Antarctic current of the Atlantic Ocean on the west coast. The latter causes the belt of cold water which runs along the coast from the Cape to the mouth of the Congo, and which diminishes evaporation from the sea, and the colder this water is the less evaporation takes place. The influence of

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this cold water belt is still more striking on the west coast of South America where, as a result of the perpendicular direction in which the Antarctic current strikes the continent, the south coast from Valparaiso to Cape Horn has a rainfall of 80 inches, while to the north of Valparaiso, with the same latitude as the Cape, the rainfall along the cold water belt to the Equator is nil. Those are factors of widely greater importance than the small lakes of the Kalahari. It is true that Anderson describes Ovamboland as a "glorious" country, but were the conditions then very different to what they are now in a wet year and the overflow from the Cunene irrigated some part of the country? The Etosha Pan may have received some water, instantly evaporated, and the small lake Ngami could only have had a small influence. Is it not more probable that the ice of the Antarctic continent has enormously increased? In the Northern Hemisphere we know the influence of the ice in the North Atlantic, and the conditions in the Southern Hemisphere are, in consequence of the Antarctic current, still more pronounced. The conditions of the ice depend again on the activity of the sun, and is it a mere chance that the cycle of the flood-years in South Africa seems to correspond to the eleven years cycle of the maximum of the sun spots? The ice conditions of the Antarctic are now occupying the minds of the meteorologists of the world. But there is something more. In the articles of *The Farmers' Weekly* Mr. C. K. Hall describes how the south-easter returns at a higher altitude as the north-west anti-trade. To be able to rise the south-easter must be heated, and the hotter the South African continent is the sooner the south-easter rises and returns as the north-western anti-trade without penetrating into the equatorial moisture belt. The veld, both of the Karoo and of the central Union region, has deteriorated much by exhaustion of the soil, caused by the grass fires, and of course the vegetation is the great factor to which the cooling of the earth is due. When, in November and March, the soil is less hot the south-easter must go further north to acquire the necessary temperature to rise and penetrates then into the moisture belt, whence it returns as the north-western anti-trade with abundant rain, or at least heavy clouds, of which we must do our best to facilitate the precipitation by all possible means, such as paraballs, electrical negative waves, or dust thrown out by aeroplanes, without, however, attacking the highest clouds, in which case we may produce artificial hail. To oblige the south-easter to go as far north as possible we must cool the continent by afforestation on a large scale. We must produce cheap fertilisers by a national industry, in order to improve the fertility of the soil. We must use every drop of water for "dry farming" and irrigation; we must reclaim as much as possible of the Kalahari. Further, to promote the condensation of the moisture from the Atlantic, we must establish a large forest belt along the plateau of South-West Africa along its whole length. This costs money, but it will be productive capital for the next generation. But we sleep and we do nothing at all. We let even the great Okavango, a greater river than the Orange River and Vaal combined, entirely evaporate in the Papyrus swamps, and the south-easter is more and more prevented from going so far north that it could bring this moisture to the south, except in March, when it is least required. Professor Schwarz's proposal goes against this practical suggestion. No water must under any condition be allowed to run back to the sea except under exceptional conditions for generation of power, but, before it evaporates, it must serve a useful purpose, which is "irrigation," as an intermediate stage. It is an undisputable fact that the climate of Algeria has greatly improved by cultivation since 1830 and that the climate of Tunis is on the way to become what it was in the Carthaginian time. Certain flourishing oases in the Sahara have returned to a desert state simply through the abandonment of the population caused by the raids of the Touaregs and of Rabah. The French and the English, after pacification, are now actively pursuing a policy of restoration permitting the country to return to a former prosperity. Will the Union of South Africa take the responsibility, as mandatory of the South-West Protectorate, to let the Kalahari remain as it is with the unavoidable

result of its encroachment on both the Union and South-West Africa? The Makarikari is, however, a saltpan, and Etosha Pan and Lake Ngami are low level points. To use these lakes as reservoirs for irrigation the water would have to be pumped; a possible operation for a moderate scheme but not for the millions of acres which can be irrigated from the Angola Rivers. The Government's large irrigation schemes, inaugurated at Haartebeestpoort, providing storage for the average floods only, leaving the great floods out, are thus also directly opposed to the general restoration of the climate of South Africa. Afforestation schemes are provided exclusively for assuring on a small scale the future need of timber in South Africa, but their influence on the general climate of the country is neglected. A broader mind must be introduced into South Africa. Afforestation, fertilisation, irrigation on a large scale of the Union, Kalahari and South-West Africa are the factors which alone can bring about an improvement of the climate of South Africa.

City Deep.

The report of the directors of the City Deep for the quarter ended 30th June gives total footage 4,534 feet; footage sampled on Main Reef Leader, 1,930 feet. The payable reef disclosures were as follows: Main Reef Leader, 1,440 feet; width, 36 inches; assay value, 18.6 dwts. The tonnage crushed was 146,500 tons, while the total yield was 9,374 dwts. The labour supply is still most unsatisfactory, although there was a slight improvement as compared with last quarter, which was reflected in the increased profits. Development values continue to be satisfactory. The south shaft was sunk 297 feet. The total working expenditure was £207,021, and the working profit carried down £83,091, or 11s. 1d. per ton milled.

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THE VAAL RIVER AND ITS POSSIBILITIES.—II.

[By W. INGHAM, M.I.Mech.E.]*

QUALITY OF WATER.

In the first example (see chemical analysis) the solids were 868 per million, and in the second only 180 per million, as compared with 1,050 under the worst conditions. It will be observed that the total hardness increases as the quantity of water flowing in the river decreases. This is due to the increasing proportion of dolomitic water as the flow in the river decreases. The samples taken for bacterial examinations show that the water is remarkably free from the ordinary organisms usually found in river water and the number of bacteria is also very small for such a river. This is no doubt due to the amount of silt carried by the river. The first chemical sample was taken in February when the river was discharging 1,220 cubic feet per second, and the second sample when only 80 cusecs were passing. The sample taken for bacteriological examination was taken on the same date as that for chemical analysis on the 27th June, 1913.

CHEMICAL ANALYSIS OF THE VAAL RIVER WATER.

The following analyses were made by the Government Analyst (Dr. McCrae) of two samples of water taken at a point 400 yards above the Railway Bridge at Vereeniging on the 3rd February, 1913, and on the 27th June, 1913:

ANALYSES

(Result expressed in parts per 100,000).

	Discharge of river.	
	1,220 cu. secs.	80 cu. secs.
	No. 1.	No. 2.
	3/2/1913.	27/6/1913.
Total solids	86·8	17·95
Loss of ignition	9·95	5·8
Chlorine	0·6	0·5
Nitric nitrogen	Nil.	Nil.
Nitrous nitrogen	Nil.	Nil.
Saline ammonia	0·0036	0·0016
Albuminoid ammonia	0·0688	0·0112
Oxygen absorbed (4 hours at 27° C.)	0·44	0·14
Total hardness	7·08	9·6
Permanent hardness	—	2·0
Poisonous metals	Nil.	Nil.
Iron	Heavy.	(Appreciable amount.)

Dissolved solids	...	...	...	10.2
Loss of ignition	...	...	...	6.65
Suspended solids	...	...	...	76.6
Loss of ignition	...	...	...	6.65
Oxygen absorbed in 4 hours by the clear water	...	...	...	0.056

No. 1.—The suspended matter consists of clay and sand. On addition of alum the suspended matter deposits well. The sample is remarkably free from water organisms (apart from bacteria).

No. 2.—The turbidity is due to light sand and clay. On standing, the sand deposits, but the clay remains in suspension. Addition of alum causes a ready deposition of the clay.

BACTERIOLOGICAL EXAMINATIONS.

The water has been examined by Dr. W. Watkins-Pitchford, the Government Bacteriologist, with the following results:—The samples of water in this case were taken on June 27th, 1913, and sample "A" is similar to the chemical sample (No. 2) taken on the same date. B2020/13 "A." At Vereeniging Weir: 53 organisms per c.c. growing at 37° C. *B. Coli* present in 1 c.c., not isolated from 0.1 c.c. B2021/13 "B." Above Vaal River Bridge: 30 organisms per c.c., growing at 37° C. *B. Coli* present in 1 c.c., not isolated from 0.1 c.c.

SILT AND SOLID MATTER CARRIED BY THE VAAL RIVER.

The silt contents of any river varies with the discharge, but is also affected by the incidence of the rainfall and the amount of rain which previously fell on the catchment area. For instance, the greatest amount of silt is usually found in a river where there is a heavy fall of rain following immediately after a dry period at the commencement of the rainy season. It is also usual for the water in a rising flood to have a greater silt content than in a falling one. In the Vaal River the silt content varies considerably and the greatest quantity up to the present at Vereeniging has been 1,050 parts per million parts of water by weight as compared with 1,500 parts per million in the River Nile (Egypt). Sir W. Wilcocks estimates that the River Nile discharges 15,000,000 million gallons of water into the Mediterranean during an average year and that the total solid matter contained in that quantity is no less than 36,600,000 tons. Some impression of the silt contents of the Vaal River can be obtained by perusing the following figures. The average flow of the Vaal at Kimberley over a period of 30 years is 4,587 cusecs, and this is equal to an average annual discharge of 904,000 million gallons. Taking the average amount of silt at 700 parts per million, the total weight will be 3,161,342 short tons or 42,191,226 cubic feet, and this will cover 1,935 acres to a depth of 6 inches. The solids in suspension at the Kimberley waterworks for ten samples taken at various times has varied from 7 to 2,872 parts per million, or an average of 687 per million, as shown in the following: Solids in suspension in parts per million:

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* Excerpt from Presidential Address read before the S.A.A. for the Advancement of Science.

2,872·0, 164·0, 16·0, 7·0, 1,271·0, 277·0, 981·0, 557·0, 499·0, 163·0; average per ten samples, 687·3. (These figures have been supplied by F. S. Lynch, Esq., General Manager, Kimberley Water Works.)

DISCHARGE OF THE VAAL RIVER.

The quantity of water passing down the Vaal River during the years 1900 to 1905 and 1910 to 1919 is shown in Table "D." The discharges during the former period 1900-1905 were obtained by Mr. Laschinger and during the latter period by the Government Irrigation Department and the Rand Water Board. Table "E" shows the average monthly discharge over a period of 13 years, and it will be observed that January is the month of greatest flow and June that of lowest flow. Table "F" shows the discharge in cubic feet, the average annual rainfall and the percentage run-off. The run-off, as will be observed, varies very greatly, the lowest being 1·55 per cent. during the hydrographical year 1913-1914, and the highest 35·25 per cent. during the year 1917-1918. The monthly discharge of the Vaal River at Vereeniging for the year mentioned above is shown graphically on plate No. 5. Plate No. 6 shows the discharge of the Vaal River at Vereeniging and Kimberley for a period of one year, and it will be observed that the time lag with reference to floods usually varies from about 7 to 11 days.

TABLE "E."

Taking the average flow per month of the Vaal River at Vereeniging over a period of 13 years (1900-1905 and 1910-1918) the discharges are in the following order:

Month.	Million Cubic Feet.
1. January (highest)	22,507
2. March	17,163
3. November	16,464
4. February	15,582
5. December	13,740
6. October	3,678
7. April	2,863
8. May	1,472
9. August	1,011
10. September	754
11. July	573
12. June (lowest)	556

PERSONAL.

Mr. S. R. Potter, the Editor of this Journal, has gone to Natal for a brief holiday.

We regret to report that Mr. Owen Letcher, the Mining Editor of this paper, has been obliged to undergo a serious operation at a nursing home. The operation, we understand, has been successfully performed and it is hoped that the best results will follow.

By this mail Professor Yates has been informed that Prof. W. Frecheville has, after many years' service, resigned the Chair of Mining at the Royal School of Mines and has been succeeded by Professor S. J. Truscott, formerly of the Consolidated Gold Fields of S.A. and associated with Mr. J. Hays Hammond on the Rand, and author of the standard works on these fields. Mr. Arthur Yates, a former well-known figure in Johannesburg, is also at the School as Lecturer on Mining. Like other national educational institutions, the R.S.M. is, at the moment, very busily occupied with its numerous students returning from the front.

We regret to hear by cable of the death in London on Saturday last of the Hon. J. G. Maydon. Mr. Maydon was elected member of the Legislative Assembly, Durban (Greyville), 1893; Durban Borough, 1901; re-elected 1901 and 1902; was made Colonial Secretary 1903; assumed control of the Natal Railway and Harbour Departments, 1901; Minister for Railways and Harbours, 1904; resigned and

TABLE "F."
DISCHARGE OF VAAL RIVER AT VEREENIGING.

Hydro- graphic Year	Dis- charge in Million Cubic Feet.	Average Annual Rainfall in Inches.	Per- centage run off.	Remarks.
October to September.				
1900—1901	34,950			10 months only.
1901—1902	36,176			
1902—1903	16,184			
1903—1904	77,582			
1904—1905	5,666			3 months only.
1910	66,738			8 months only.
1910—1911	86,092	33.57	6.97	
1911—1912	41,592	25.39	4.45	
1912—1913	25,768	28.57	2.43	11 months only— October missing
1913—1914	14,278	25.00	1.55	
1914—1915	152,334	29.72	13.92	
1915—1916	102,406	26.62	10.45	
1916—1917	46,158	33.60	3.74	
1917—1918	522,303	40.26	35.25	
1918—1919	81,070	—	—	8 months only.

NOTES:—The discharge figures for the period 1900 to 1905 are from a catchment area of 15,839 square miles, and for the period 1910-1919 from an area of 16,319 square miles.
No rainfall records over the catchment area are available for the period 1900-1905, so that the runoff percentages cannot be calculated.

(To be continued.)

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

reappointed 1905. At the last election in 1906 he was returned for Durban Borough, but resigned owing to opposition views held by his constituents in Durban, and on standing again was defeated by Colonel James Scott Wylie, K.C. He was elected to the Union Parliament in 1910.

Messrs. Picot & Co., Ltd., of New York, have started business in Johannesburg as the representatives of approximately two hundred and fifty manufacturing firms of America, all specialising in their own sphere, the majority of whom are already known in this country. Messrs. Picot & Co., Ltd., have announced in another part of this issue that the parent company is the Allied Machinery Company of America, and the various manufacturers coming under the agis of this large corporation are out to capture the trade of South Africa in all lines of machinery. Messrs. Picot & Co., Ltd., have already booked large orders for agricultural machinery and have undertaken to put down a complete sugar plant in Natal and guaranteed delivery, and they will work the plant for a month before handing it over.

East Rand Proprietary Mines.

The report of the directors for the quarter ending 30th June, 1919, shows: Total footage, 3,457 ft.; total footage sampled on reef, 2,025 ft. The payable reef disclosures were as follows: Main Reef, 40 ft., width 43 in., assay value 8·0 dwts.; Main Reef Leader, 1,200 ft., width 26 in., assay value, 18·3 dwts. The tonnage crushed was 331,000 tons, and the total yield per ton 6·090 dwts. The total working expenditure was £400,690, and the working profit carried down £24,631, or 1s. 6d. per ton milled.

MINING LEASES: GOVERNMENT INSPECTOR'S REPORT.—II.

Points from Mr. Twiddy's Views on the Springs, Brakpan and State Mines.

In his reports for the quarter ended March 31, Mr. J. H. Twiddy, the Inspector of Mining Leases, writes, *inter alia*, as follows:—

SPRINGS MINES, LIMITED.

During the quarter the ore reserves as at 31st December, 1918, were estimated, the pay limit adopted being 5 dwt. over a stoping width of 50 inches. The following table shows the ore reserves:—

	Tons.	Value. dwt.	Stoping width. Inches.
(a) Payable:			
Available	1,250,865	8·8	60
Unavailable (including pillars)	1,116,771	9·8	63
Total	2,367,636	9·3	61
(b) Unpayable	214,032	4·4	55
"	221,781	3·8	51
"	5,572,283	2·1	51
Total	6,008,096	2·2	51

The reason that there is such a large proportion of payable reserves unavailable is due to a number of blocks not yet being fully developed and opened up for attack. The payable ore reserves as at 31st December, 1918, show a decrease of 199,000 tons compared with these reserves as at 31st December, 1917. The total tonnage mined from payable ore reserves during the year 1918 amounted to 384,966 tons, whilst the total payable block ore developed was 612,716 tons, making an excess of payable ore developed over payable ore mined of 227,750 tons, but, owing to adjustments and chiefly to the elimination from the payable reserves of a large tonnage mostly in the north shaft section of the mine, formerly regarded as payable but which as stoping progressed proved to be of value below the present pay limit, this excess of 227,750 tons has been converted into a decrease of 199,000 tons, so that the total adjustments approximated a total decrease of 427,000 tons from the payable ore reserves. It may be observed that the gold has a tendency to run in shoots, and the boundaries of ore blocks are sometimes drawn to follow the trend of these shoots, but it does not necessarily follow that the shoots have the regular boundaries so assigned to them. Considering that the length of reef exposed by development on the perimeters of the blocks of ore does not average more than 37 per cent. of such perimeters, there is a large margin for error in the location of the shoot boundaries and too much reliability cannot therefore be placed on the ore reserve figures. During the time the mine has been in operation and up to the end of 1918, the area of ground developed and brought into reserves is equal to 654,000 lathoms, and of this area 30 per cent. has been represented by payable reserves. The milling tonnage per claim in the ground opened up to 31st December, 1918, averages 7,200 tons per claim. There was an increase in the tonnage mined of 6,386 tons. The average width and value of the ore mined from the payable reserves, according to data adopted in the estimation of reserves as at 31st December, 1918, were 10·40 dwt. over 60·82 inches, while the payable reserves as a whole at that date averaged 9·26 dwt. over 61·25 inches, over-mining thus taking place to the extent of 1·14 dwt. It, however, happened that the sampling value of the ore mined from payable reserves did not reach the estimated block value and there was a falling-off of exactly one pennyweight. The gold obtained per ton milled dropped 0·97 dwt., the reason being that the value of the ore sent to the mill was 0·76 dwt. lower consequent on the stope sampling value having fallen as has already been mentioned.

GOVERNMENT'S SHARE OF PROFITS.

The share of the divisible profits of the company for the year 1918 accruing to the Government was £55,317, arrived at as follows:—

Value of gold produced	£914,383
Less—Working costs, general administration, management, and amortization allowance	626,115
Divisible profit	£288,268
Share thereof due to Government:	
(1) Five per cent. participation in profits in terms of the lease	£14,413
(2) Normal and dividend taxes under the Income Tax (Consolidation) Act, 1917	40,904
	55,317
Balance to company	£232,951

The working expenditure has been properly allocated and is allowable in terms of the Acts under which the assessments are made. During the year 1918 dividends Nos. 1 and 2 were declared, amounting in the aggregate to £259,187. Dividend No. 1 consisted of a distribution of one share in West Springs, Ltd., for every ten shares held in the Springs Mines, Ltd. To effect this distribution the company had to borrow £50,000 to complete the purchase of the necessary shares. Dividend No. 2 of 12½ per cent. on the issued capital of £1,153,500 was paid

to shareholders on the 11th February, 1919, and to effect payment on that date £137,000 was borrowed. The interest paid by the company on these and other temporary loans has not been admitted as a charge in arriving at the profits for division under the lease, but it is admitted in the assessment under the Income Tax (Consolidation) Act, 1917. The milling capacity of the plant is 41,666 tons per month, but the average monthly tonnage milled for the quarter only reached 35,333 tons. The haulages in the mine, owing to the layout, are for portions of their length frequently on the up or down grade, and considerable trouble and delay are in consequence experienced in the transport of the ore. This question of underground transport, together with the handling of the broken ore, aggravated by the limitation in the number of available stoping faces, is at the present time, in my opinion, the dominating cause of the full milling capacity not being reached. Regarding the payment of dividends referred to under the head of extraordinary expenditure, from an analysis of the company's accounts, the company was not in a position to distribute dividends, the unappropriated profits being insufficient by approximately £150,000 to cover the expenditure on the equipment of the mine in excess of the capital provided.

GOVERNMENT GOLD MINING AREAS (MODDERFONTEIN) CONSOLIDATED, LIMITED.

During the quarter the reserves as at 31st December, 1918, were estimated, the pay limit adopted being 4 dwt. over a stoping width of 60 inches. The following table gives the ore reserves at the four shafts:

Shaft.	Payable			Unpayable		
	Tons.	Value.	Per-centage.	Tons.	Value.	Per-centage.
North-west	2,687,103	7·92	30	2,018,046	2·21	40
North-east	658,797	5·85	7	1,508,906	2·12	29
South-west	3,352,557	9·56	36	609,888	2·14	12
South-east	2,537,632	7·13	27	954,865	1·84	19
Total	9,236,089*	8·15	100	5,091,705	2·10	100

*This total has been based on an average stoping width of 76·3 inches. It has since been decided to increase this width to 78 inches, and the total payable ore reserves are now 9,445,000 tons, valued at 8 dwt.

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The ore reserves were increased during the year by 2,428,982 tons, whilst the value as a whole has been increased 0.5 dwt. per ton and the width decreased by 0.9 inch. The average total working costs per ton milled for the year 1918 were 19s. 9d., which, after making allowance for sorting and residues, is equivalent to a reserve block value of 4.5 dwt. The year's costs were materially increased above normal owing to the war; therefore the limit of 4 dwt. as a minimum payable reserve value may be accepted as reasonable. Of the total payable reserve tonnage only 8 per cent. is below 4.5 dwt. The value and width of the ore mined during the past year from payable reserves were 8.8 dwt. over a stoping width of 80 inches, equivalent to 704 inch-dwt., whilst the block value and width of the ore reserves from which this ground was mined were 7.9 dwt. over a stoping width of 80 inches, equivalent to 632 inch-dwt.; therefore the ground mined turned out to be 0.9 dwt. per ton higher than estimated. The average block value of the total payable reserves was 7.5 dwt. over a stoping width of 78.9 inches, equivalent to 592 inch-dwt. It will thus be seen that the estimated block value of the ground mined from payable reserves was 40 inch-dwt. above the average estimated value of the total payable reserves, which may be considered as satisfactory. In the estimation of ore reserves there is some divergence of opinion as to what amount of development is necessary before ground may be positively brought into payable reserves. In some instances it is the practice to expose the whole of the periphery of a block of ore, or in other words that ore should be completely blocked out before it is included in reserves. It is generally admitted that locality enters largely into this question, in so far that what would in one district be considered as safe estimation would in another district be considered as unduly optimistic. On the Far East Rand, where the dip of the reef is comparatively flat and where the pay shoots cover considerable areas, more latitude is taken regarding the exposure of ore and much less opening up or blocking out is considered necessary before ore is brought into reserves. In development in the pay zones on the Government Gold Mining Areas, a distance of 250 feet on both sides of a heading is considered payable, and such area is brought into reserves although the reef exposure may be as low as 25 per cent. of the periphery of a particular block. Taking the blocks of payable ore as a whole, it is found that of the total reef periphery of such blocks only about 46 per cent. has been exposed. The same practice is adopted in estimating both payable and unpayable reserves. The small amount of development at the North-west Shaft is due to the fact that several levels to the west are in fairly close proximity to the western boundary, and no work is proceeding in these at present. Also to the north of the shaft, where the ground is of low grade, no work is going on. Most of the ends in the more southerly area of the shaft are progressing. A very small amount of development is taking place at the North-east Shaft, the ground as a whole being of low grade. The greatest amount of development is taking place at the South-West Shaft, and in this section the percentage of payable ground

is the highest. The development in the South-east Shaft section is about normal. The policy being followed in connection with the development is to advance those ends which are in conjunction with the scheme of ventilation, and where ends are in unpayable zones progress has been largely stopped unless forming a part of the scheme. The known unpayable areas to the north and east of the two northern shafts are not at present being developed, as it has been considered advisable to postpone their development until existing high costs may become reduced. It will therefore be seen that the present development must not be accepted as a true reflection of the average value of the ground as a whole, as the results obtained tend towards a higher percentage of payability than would have been the case had the mine been evenly developed at all available points.

GOVERNMENT'S SHARE OF PROFITS.

The share of profits payable to the Government under clause 11 of the lease for the year ended 31st December, 1918, amounts to £361,269 12s. 1d., arrived at as follows:—

Value of gold produced	£2,162,585
Add—Sundry revenue	1,391
	£2,163,976
Less—Working costs	£1,243,150
Insurance, exchange and gold realization	49,424
	£1,292,574
Less—Charges disallowed	3,929
	1,288,645
Total cost of production	
	£875,331
Less—Amortization allowance	58,174
	£817,157
Net produce subject to Government's share	

There has been a considerable improvement during the quarter in the number of natives employed, and the tonnage milled was increased by 14,000 tons, although the full capacity of the mill was not reached. The mine is worked in a satisfactory manner, and the question of ventilation is receiving the careful attention of the management. The mine in regard to payable ore in reserve is in a very sound position.

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HADFIELDS LTD. AND THE WAR.

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At the ordinary general meeting of the shareholders of Hadfields Ltd., which was held a little time back, Sir Robert Hadfield, Bart., D.Sc., F.R.S., M.Inst.C.E., the chairman of the company, reviewed, *inter alia*, the operations of the concern during the war, about which we take the following interesting notes. The works now comprise no less than 61 acres of buildings, with a total area of 225 acres including the various storage departments for raw material and fuel. They employed during the war about 15,000 work-people on the manufacture of war material, also steel of all kinds, forgings and castings for railways, coal and other mines, shipbuilding and hydraulic press work, engineering construction of all kinds, and many other applications. The plant is capable of producing about 200,000 tons of steel per annum, including the output from a considerable number of open-hearth furnaces (both acid and basic processes), electric steel, and steel made on the Hadfield system. It includes some 300 electric overhead, steam and other cranes. There are in the works 21 large and small locomotives, 21½ miles of railway (14½ broad gauge and 7 narrow), about 750 electric motors, 250 heating furnaces, 2,300 machine tools, 80 presses, including eleven hydraulic forging presses from 500 to 2,000 tons capacity, three of which are probably the largest horizontal hydraulic forging presses in the country. From August, 1914, to a little beyond last year, or approximately 4½ years, they melted 630,000 tons of material for their steel products. The greater portion, at least 90 per cent. of this, has not been cheap ordinary steel such as is used for bars, rails, plates and the like, but very high-class steel, in many cases, containing a specially low percentage of the deleterious metalloids, sulphur and phosphorus, also alloy steels, manganese steel, and other special products. They have turned out something like 24 varieties of these steels, and made a special point of quality. Moreover, the company made not only the highest qualities of open-hearth steels, but also electric steel to the considerable total of close upon 100,000 tons. This electric steel was specially important because it was produced practically without having to trouble the Government for new supplies of raw material, thus saving the importation and transport of foreign ores, which was a matter of very great importance at the time, either on the ocean or railways at home. The whole of the steel output was sufficient to make a bar, say, of the calibre used for making the 6 in. high explosive shell, having a total length of not less than 2,700 miles. Another way of putting this is that there was produced enough steel to make a bar 2 in. diameter which would completely encircle the earth at its equatorial circumference. In addition to the steel produced under Hadfield's own system, they turned out large quantities of steel by the open-hearth (basic and acid) processes

from furnaces varying from 15 to 40 tons capacity. As regards electric steel, Hadfields have the largest battery of furnaces in the country, some dozen in all, with a weekly capacity of a thousand tons. Probably their steel department contains, all in one shop, the biggest battery of electric furnaces in the world. Hadfields have carried out and supplied a total value of no less than £36,000,000 of their products during the war, including their national factory products and their expenditure on war work in their own works plant, buildings, machinery, etc. This output includes very large quantities of steel of all kinds, castings, forgings, and rolled products, also railway work, locomotive work, and materials for tanks, aeroplanes, and many other applications of similar nature, all absolutely essential for the carrying on of the war.

One of the most remarkable of the Hadfield war productions is the class of work known as "guns," this term comprising howitzers, trench howitzers, and mortars, guns and their adjuncts, such as gun parts. Before the month of March, 1917, beyond experimental products in the form of gun work, Hadfields had never made any guns or howitzers, in fact, the only gun in the works was the famous Krupp 10½ c/m gun supplied from Essen in the year 1903, and used at the proof butt for experimental work. This may be correctly said to have been the first gun captured in the great war, because the moment war was declared on August 4th, 1914, it passed out of the hands of the Germans. Notwithstanding that the company had not made guns previously to March, 1917, at the request of the Government they quickly adapted themselves to this difficult branch of production with the greatest success.

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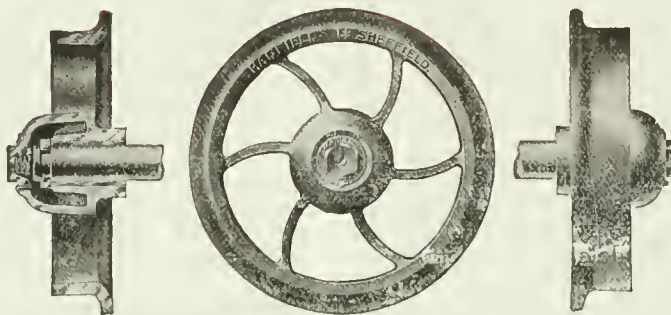
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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Holiday Market and the Position as to Importers—Agricultural Machinery and the Prospects of Establishing a Factory—Dominion Shipping for Delivery of Coal to Italy?—Timber and Building Materials.

As this is the great Peace holiday week, very little business has been done so far in the wholesale trades, therefore hardly any news is available. It may be a good alternate idea to make a few comments on the future, and so give merchants various thoughts as to their buying and selling. Prophecy is not always a good thing to take in hand, but all import merchants are more or less prophets when making their overseas indents. With this idea in one's mind it was fortunate to come across an iron and steel merchant, in rather a good way of business, who stated that he held the best part of 1,000 tons of iron and steel, both imported and South African, on hand. The market has to some extent gone against him of late, but as he is part and parcel of the market he intended to run with it. Towards this end he would have to sell a lot of his present stock at a sacrifice, therefore he intended selling as quickly as circumstances permitted, with the view of being in the position to purchase stocks either higher or lower. It certainly was not clear at the moment what would happen in the near future; it seemed that Canada and America would control prices and so undercut all British steel and iron goods. There were labour troubles everywhere to-day, but these, like a lever, would no doubt run their course and eventually rather make for lower prices than higher ones. He mentioned a case where the British manufacturers were quoting £10 a ton less for galvanised roofing iron as compared with the American quotation, thus showing that one has to take all the general statements with caution. In the *Star* cable published on Monday it was stated that the Continent of Europe is turning to Germany, America and Japan for goods at lower prices than can be obtained from Great Britain. The word Germany seems a little premature, but from that source is the unknown quantity which is worrying merchants' minds, certainly on the Witwatersrand, if not the whole of South Africa. In writing about the future a certain latitude is allowable. Now a representative of a big indenting house for Great Britain in the drapery and clothing trades was emphatic in his statement as to the future. He thought that the clothing trade could not be seriously touched by any other country in the world as compared with Great Britain, where people knew how to make cloth and, what was more, put the finish and style into men's clothing. He said there was something about the get-up that could not be touched by any other place. At the present moment Johannesburg will have to lift up prices to replace those being sold locally, therefore, practically on that account alone prices might go a little higher here. Taking into account that view of the position, he thought we were running along at about top values, more especially as some classes of wool from Australia and South Africa have fallen from 10 to 15 per cent. Some time ago this gentleman ordered a rather big consignment of clothing from another country, but in many respects they fell behind the British article and the difference in price was not of sufficient consequence to make it advisable to repeat that order. It is also said that by every steamer from London comes a lot of spares of all classes of machinery and special hardware lines. It is not altogether clear whether the engineering and foundries in Johannesburg are feeling the bad effects of these new consignments or whether it be the uncertainty created by the Low-Grade Mines Commission; the fact remains, however, that the services of a number of

expert workmen have been dispensed with by the establishments just prior to the Peace holidays. In this respect it is further stated that this restricted employment is not unusual at this period of the year, and again for the work to pick up about Christmas time.

THE CONCLUSION OF THE MATTER.

No doubt the labour troubles, with the unfortunate strikes everywhere, will give our own manufacturers a new lease of life for the next couple of years at least. For example, take the latest strike of the furniture employees; that, no doubt, will send a lot of business to the coast, where cheaper labour obtains. As not so long ago where a public institution collected all its funds in Johannesburg with the usual blowing of trumpets, and yet it had its furniture made at the coast with mostly coloured labour. Obviously, if this happened, history can easily repeat itself. The principal point, however, is that the furniture manufacturers in South Africa will fully reap the benefits whether it be made at the coast or Johannesburg. With agriculture showing greater figures to-day than the mining industry, it gives every hope and encouragement that that will be one of the great pillars of our wealth. Hear also what General Botha has to say about our Dominion new shipping line: "One of our greatest weaknesses during the war was lack of ships. We had a splendid service before the war, and he hoped the service would soon be conducted on the same cheap footing as before. He was not going to say anything against the shipping companies, but he felt the time had come, on account of over-production, when they should obtain control of shipping. We needed a fast, cheap service, and given that, with our geographical position, we should create for ourselves a future better than we could realise to-day. Many people called for preference, but while he admitted that preference was excellent, it had its drawbacks. He seriously thought the time had come when a conference should be held of representatives from the Dominions to discuss the question of a Dominion shipping line. General Smuts and himself and other friends had taken the responsibility of obtaining for this country three prize ships. These were cargo boats, and the idea was to use them for carrying our coal to find a market elsewhere, for at present a splendid busi-

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The Best for Africa.

Quite different from all other paints, supplied in any ordinary colour. Elastic, Waterproof, impervious to heat, cold, and atmospheric conditions. A perfect preservative for Iron, Wood, Stone, &c. Salt Water has no effect, is a positive cure for damp, resists the action of strong acids. Can be submerged under water, and in use withstands very high temperatures of superheated steam.

Sole Manufacturers.
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THREE SEAS BRAND.

ness could be done in coal alone. He hoped the British authorities would see the reasonableness of our claim, and give us not only these three ships, but all the 13 German ships which had been taken in these waters. We had begun in a small way, but we should continue on these lines and see whether this experiment would be a paying one."

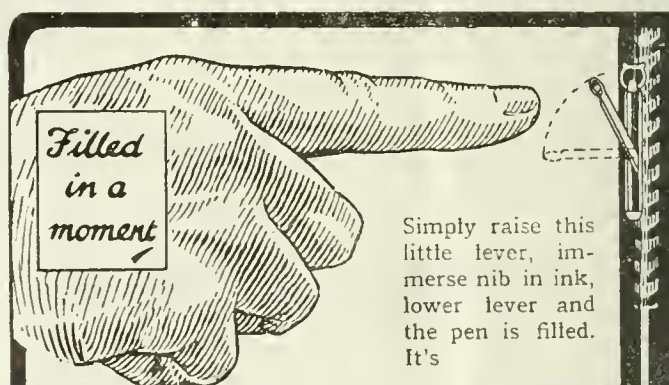
AGRICULTURAL MACHINERY.

It should gladden the hearts of all agricultural machinery dealers—the word "dealers" is put in advisedly because it is almost impossible to find anything in this line made in South Africa. This implement making industry may be slow in developing in this country, but the potentialities are immense, therefore it must eventually be another industry added to our large list. Fancy mealies of the best yellow variety having changed hands at 22s. 6d. on Wednesday's market. In this connection a merchant largely dealing with the country storekeepers remarked that they were in for another twelve months' good trading on account of the general prosperity of the farming population. His accounts were being well paid and orders for agricultural machinery, as well as general merchandise, were coming in very freely. A farmer near by said that they were having meetings to see what could be done in obtaining fairer prices for their produce, as the old plan of taking everything to the country storekeeper was anything but satisfactory, as they dictated to the producers the price they had to pay for sugar and so forth, but what was more they dictated to the farmer what they would pay for his crops. This plan may have been the best available at one time, but the progressive and more enlightened farmer was anxious to replace this antiquated exchange and barter to ordinary everyday business methods. Returning to the subject of agricultural machinery, it seems very clear that dealers cannot import too much, from the latest motor plough down to the humblest native implement. It may be that we shall have to depend more upon Canada and America than Great Britain, but, after all, this is a matter of detail. What matters is that the agriculturists are getting more and more wealthy, and therefore will have to be catered for equal to, if not better than, the tired mining industry, as the aristocrats of wealth are the farmers and the forthcoming ranch owners, who will eventually come from all quarters of the earth for cattle farming.

TIMBER AND BUILDING MATERIALS.

Business was practically resumed in the building trade on Tuesday, and a good many workmen fell to on Monday for the more pressing jobs. As regards public holidays, the question is often discussed amongst the artisans, and perhaps in a lesser degree by the masters, as to payment for public holidays. One idea mentioned is that the workmen should make up half the time and the masters give the other half. Nothing very concrete has so far transpired as the younger men are not very enthusiastic over the position. It is usually with the married men who have greater responsibility in the way of a family and perhaps paying instalments of the home they are living in. Through the good demand for Baltic timber, prices are still quietly appreciating. Deals are 1s. 7d. to 1s. 8d., according to length; floorings, 8½d. to 9d.; ceilings, 6d. to 6½d. According to the latest cables there is a scarcity of deals and scantlings in the Home markets. So far stocks are fair in South Africa, but the prospects of the building trade seem so excellent that the timber yards are only meeting immediate requirements from present stocks and booking forward the remainder for any particular job "to arrive" from the coast. Although the mechanics are putting forward a further demand for an increase in wages, it is thought that with the present activity a round table conference between masters and men may fix things amicably, as at the present time bricklayers visited on a job on Thursday were being paid 3s. 5d., and it is only proposed to ask for 3s. 6d. per hour. It is not very clear as to whether we shall not wake up one of these fine days and find that South Africa is very short of Baltic timber, as the factors in Sweden and Norway are very difficult to deal with, because of the cables taking so long to get here and the reply thereto. It is very tantalising and disappointing

that when one in Johannesburg accepts cable quotations and replies quickly the answer too often comes back that such and such a parcel has been sold, therefore the cabling has to take place all over again at the higher levels of value. Galvanised roofing iron is actually scarce in town, simply because the demand recently for finishing off new erections has been exceptionally great. No standard quotations are available; the normal one is 1s. 4d. per foot, but the term is "any price" when contractors are at a standstill to complete a roof. The high prices prevailing for commodities of all kinds cause enhanced attention to the economies in every direction, and this applies to piston and sheet packings as it does to other lines. Thus it comes about that such packings, the names of which are practically household words on the mines, are again in increasing demand, experience of late years having proved that imitations, though cheaper in first cost, are more expensive in the long run, because their shorter life necessitates more frequent repacking of glands, stuffing-boxes or flange joints. As wages necessarily expended on repacking cost almost if not quite as much as the material used, a first-class packing, which may be up to 50 per cent. dearer than an inferior substitute, often works out 50 per cent. cheaper, when the packing bill is examined over a whole year. After all, it only once more proves the old adage about the best being the cheapest in the long run. Another source of economy is the ever-increasing adoption of the oxy-acetylene process of welding and cutting metals, as by its means a broken part can again be rendered serviceable, thus obviating often quite heavy expenditure on the purchase of a new piece or part. Many concerns have found the purchase of one of these plants a most paying investment. We know of one mine which, by means of a Sirius oxy-acetylene plant, saved on a single job as many hundreds of pounds as the plant cost "tenners," and there are dozens of cases where an oxy-acetylene installation has repaid its own cost in a very short period.



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Of Stationers and Jewellers everywhere.

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The Pen Corner, London, England.

THE WEEK IN THE SHAREMARKET.

Modder Easts Again in Demand.

AFTER the call on Wednesday the market was steady. Africans were done at 13s. 9d., Bantjes at 2s. 10d., City Deeps at 56s. 6d. and 57s., City and Suburbans at 7s. 6d., Crown Diamonds at 21s., 23s. 9d. and 23s. 6d., Geduld Options at 12s., Kleinfonteins at 10s., Leeuwoports at 24s. 3d., Modder Easts at 24s. 3d., 24s. 4½d., 24s. 5d. and 24s. 6d., the 3 years' Options at 5s. 11d., 6s. and 6s. 3d., the 4 years' Options at 6s. 9d., 6s. 11d., 7s., 7s. 2d. and 7s. 3d., and the Debentures at £148, £149, £149 10s. and £150. New States realised 27s. 9d. and 27s. 6d., Modder B. 161s., New Modders £23 5s., Robert Victors 13s., States 91s. and 90s. 9d., Springs 47s., Sub Nigels 21s. 6d., the Options 11s. 9d., Sallies 5s. 10d., Van Ryn Deeps 69s. 9d., West Rand Estates 4s. 6d., West Springs 22s. 6d., Zaaipplaats 8s. 5d., 8s. 4d. and 8s. 3d., and Compounds 13s. 6d.

Modder Easts were again the feature before High Change on Thursday morning. Numerous sales were effected at 24s. 9d., 25s. and 24s. 10½d., in the 4-year Options at from 7s. 9d. to 8s., and the Debentures at £150, while the 3-year Options were quiet round about 6s. 9d. South-West Diamonds were bought at 15s. 6d. On the call the improvement was generally maintained, with a few exceptions as usual. New Modders were inactive; Modder Deeps unchanged; but Modder B. had a higher buying price. Modder Easts were ½d. higher at 24s. 10½d. sales, the 3-year Options 1s. at 6s. 9d. sales, 1-year 1s. 2d. at 7s. 10d. sales, and the Debentures £2 at £150 sales and buyers. Gedulds were about 6d. higher at 47s. 9d. sales and buyers. City Deeps also about 6d. at 57s. sales. Mines Selection about 9d. at 22s. Main Reefs 6d. at 11s., and Van Ryn Deeps the turn at 70s. buyers. Randfontein Estates made a substantial advance to 18s. 6d. sales. On the other hand, New State Areas were 6d. lower, State Mines the turn, Springs Mines 3d., and Wit. Deeps about 6d. at 14s. 6d. sellers. Zaaipplaats Tins were 6d. down at 7s. 9d. sales, Leeuwoports unchanged at 24s. 3d. and 24s. sales, while Rooibergs were 6d. higher at 6s. 9d. buyers. Diamonds were inactive, also Coal and other industrial stocks.

	Thurs. 31st.	Frid. 1st.	Wed. 6th.	Thurs. 7th.
African Farms	14 3*		13 6*	13 9†
Apex Mines	7 0*	7 0*	7 0*	7 0*
Aurora Wests	—	—	—	6 3*
Bantjes Consolidated	2 10	2 9*	2 9*	3 0†
Brakpan Mines	62 9*	63 0*	62 9*	62 9*
Brick and Potteries	—	—	—	4 6*
British South Africa	—	—	—	22 6*
Bushveld Tins	1 11*	1 11*	2 0	2 0†
Cassel Coals	30 0*	30 0*	30 0*	—
Cinderella Consolidateds	4 9*	4 9*	4 9*	—
City and Suburbans	7 0*	7 0	7 6	7 3*
City Deeps	55 0*	56 0*	55 0*	57 0
Clydesdale Collieries	22 6*	22 6*	—	—
Consolidated Investments	—	29 0†	27 6*	27 6*
Consolidated Langlaagtes	—	19 0†	19 0†	18 0*
Consolidated Main Reefs	10 6	10 9	10 6	11 0
Consolidated Mines Selection	21 0*	21 0*	21 0*	22 0
Coronation Freeholds	1 9*	1 10	2 0†	1 7*
Crown Diamonds	23 0*	23 6	24 0*	24 0
Daggafontein Mines	22 3	22 3*	22 9†	22 0*
East Rand Coals	2 6	2 4*	2 5†	2 3*
East Rand Deeps	0 10*	0 10*	0 10*	0 10*
East Rand Minings	20 0*	20 0*	20 0*	20 0*
East Rand Proprietary	6 3*	6 0*	6 3	6 3
East Rand Debentures	£70†	£70†	£68*	£68*
Eastern Golds	1 4*	1 4*	1 4*	—
Frank Smith Diamonds	4 9	4 8a	4 9*	4 9*
Geduld Proprietary	47 0*	47 0*	47 0*	47 9
Geldenhuis Deep	7 0*	7 0*	—	—
Ginsbergs	1 7	1 7	—	—
Glencairns	1 0*	1 0*	1 0*	—
Glencoe Collieries	—	5 0*	—	—
Government Areas	91 0*	90 0*	90 6*	90 6*
Johannesburg Board of Executors	30 0*	30 0*	30 0*	30 0*
Jupiters	4 0*	4 0*	4 0*	4 6*
Klerksdorp Proprietary	1 3*	1 3*	1 3*	1 3*
Knight Centrals	7 3	7 1†	6 9*	7 0

*Buyers. †Sellers. aOdd lots. bEx London.

	Thurs. 31st.	Frid. 1st.	Wed. 6th.	Thurs. 7th.
Knights Deeps	6 9*	6 6*	—	6 3
Lace Proprietary	17 6†	16 9*	16 9*	—
Leeuwoport Tins	23 0*	23 9*	24 0	24 0
Luipaardsvlei Estates	—	3 6†	—	—
Lydenburg Farms	8 5	8 4*	8 4*	8 3
Meyer and Charltons	85 0*	87 0*	86 0*	87 6*
Middelvlei Estates	1 9*	1 9*	—	—
Modderfontein B.'s	160 0*	160 0*	160 0*	161 6*
Modderfontein Deeps	166 0	166 6a	167 6	167 6a
Modderfontein Easts	23 3	23 4½	24 6	24 10½
Do. Options (3 years)	5 0*	5 4	5 10	6 9
Do. Options (4 years)	6 0	6 1	6 8	7 10
Hume Pipes	26 6*	26 6*	26 9*	27 0*
Natal Navigation Collieries	22 0*	23 6*	—	26 3*
National Banks	—	297 6a	298 6†	297 6*
New Boksburgs	—	—	1 6*	1 9
New Eland Diamonds	—	25 0*	25 0*	—
New Era Consolidated	10 9	10 9†	10 9	10 9*
New Geduld Deeps	4 8	4 7*	4 7*	—
New Heriots	8 0†	—	8 0†	7 6
New Kleinfonteins	9 9*	10 0†	10 0	9 9*
New Modderfonteins	£26*	£26*	£26½	—
New Primrose	—	2 6*	2 6*	—
New Unifeds	3 0*	—	—	—
Nigels	6 0*	6 0	—	5 9*
Nourse Mines	10 0*	10 6*	11 0*	11 9*
Premier Deferreds	160 0*	160 0*	165 0*	—
Premier Preferreds	150 0†	150 0†	147 6*	—
Pretoria Cements	75 3*	76 0	76 0*	75 6*
Princess Estates	—	2 3*	2 4	2 3*
Rand Collieries	3 0*	3 0*	3 0*	—
Rand Mines	65 0*	—	—	—
Rand Nucleus	1 9*	1 9*	1 9*	1 9*
Rand Selection Corporation	71 6*	71 0*	72 0*	—
Randfontein Deeps	4 4*	4 5*	4 4*	4 9
Randfontein Estates	16 6	16 3*	16 9*	18 6*
Roberts Victors	12 0*	12 0*	—	—
Rooibergs	6 3*	6 4*	6 3*	6 9*
Ryan Nigels	4 0†	3 9*	3 9*	—
Shebas	1 3*	1 3*	1 3*	1 3*
Simmer Deeps	1 3*	1 3*	1 3*	—
South African Lands	5 11*	6 0	5 10*	5 9*
Springs Mines	46 9*	47 0	46 9	46 6*
Sub Nigels	21 3*	21 3*	21 6*	21 6*
Swaziland Tins	13 6*	15 6*	—	—
Transvaal G.M. Estates	—	—	12 9*	12 9*
Van Ryn Deeps	68 0*	68 9*	70 0	70 0*
Van Dyks	2 3*	2 3*	—	2 6†
Village Deeps	12 0†	—	12 0*	12 3*
West Rand Consolidated	4 0*	4 0*	—	—
Western Rand Estates	4 3*	4 0*	4 3*	4 3*
Witbank Collieries	—	58 9*	—	—
Witwatersands	—	—	18 0†	—
Witwatersrand Deeps	14 0*	14 6	14 0*	14 0*
Wolhuters	2 11*	—	2 9*	2 10*
Zaaipplaats Tins	8 0	7 10	8 3	7 9
Union 5 per cent.	£103½	£107½	£107½	£103½
New State Areas	29 0	28 6	28 0	27 6
South Van Ryns	9 0	8 10*	9 0	8 11
South African Alkali	19 0a	17 0*	15 0*	17 0*
Tudors	1 2*	1 3†	1 2*	1 2*
Tweefontein Collieries	24 1*	24 6*	24 6*	24 6*
West Springs	22 9*	22 9	22 3*	22 0*
Do. Options	5 3†	—	5 0	—

*Buyers. †Sellers. aEx London. bOdd lots.

CORRESPONDENCE AND DISCUSSION.

“Buss” Classifiers.

To the Editor, S.A. Mining and Engineering Journal.

Sir,—Perhaps you could kindly tell us whether there is a local agent carrying stock of the “Buss” classifiers. Yours, etc.,

FRANK T. RICHARDS,
Managing Director, Union Tin Mines.

[Any information from our readers with reference to this matter will be thankfully received.—Ed.]

ENGINEERING SECTION.

HAMMER DRILLS—THEIR HISTORY, DESIGN AND OPERATION.—V.

[By HENRY S. POTTER.]*

We now come to the consideration of one or two of the rigs as used in connection with Jack Hammers. When these machines are used in flat stopes it is generally advisable to rig them on some light form of bar. Slide 37 illustrates a very simple form of column bar which allows of a maximum size of screw to be used with any given diameter of bar. It will be noticed in this design that the nut is rotated by means of a tubular or stick spanner and can be locked in any given position. The nut and screw can be readily changed from one length bar to another. Slide 38 illustrates a type of cradle with which a good deal of work was done in 1911-1913 in connection with hammer drills as used in flat stopes. It will be noticed that the machine is simply laid on the carrier and so as to facilitate working in various conditions an auxiliary slide is fitted so that the whole cradle can be moved to or from the face, also a drill support is provided. Several modifications of this cradle are now in use and in most cases users have preferred to bolt their Jack Hammer to the cradle. Slide 39 is a modification of the cradle as shown in Slide 38, which has the advantage that almost any mine can make this for itself. It consists of two rectangular bars with a drill support at one end. The front head and handle of the machine is provided with rectangular lugs which slide in between the rectangular bars forming the cradle frame, the hammer drill being fastened

to the feed screw nut by means of a taper pin. By removing the pin the machine can be operated so that the hose pipe flows off to the left or right as the condition of the stope necessitates. The feed screw, it will be noticed, is in tension so that a small diameter of screw can be used. I have always found when drilling with rigs of this description that a drill support is of very great advantage especially with drilling on to oblique faces. (See also Figures N and O in the text.) Slide 40 illustrates an automatic pawl feed rig of Bornets. This is similar to a device which was used in the stope drill competition of 1909. It makes a light simple rig; the feed is obtained by means of the piston striking the front end of the machine, thus forcing the pawl from one engaging position in the rack to another. Illustrations of two telescopic rigs are included in the text, one being of the Sullivan design of 1916, and the other of about 1907. (See Figures N and O.) It will be noted that the slides we have been examining relate particularly to the Jack Hammer type of machine, and we will now proceed to examine some of the characteristics of these machines.

Materials of Construction.—It is now generally admitted that the best materials to make the cylinders, handles and front heads, etc., are mild steel drop forgings, this material

*Paper read before the South African Institution of Engineers.

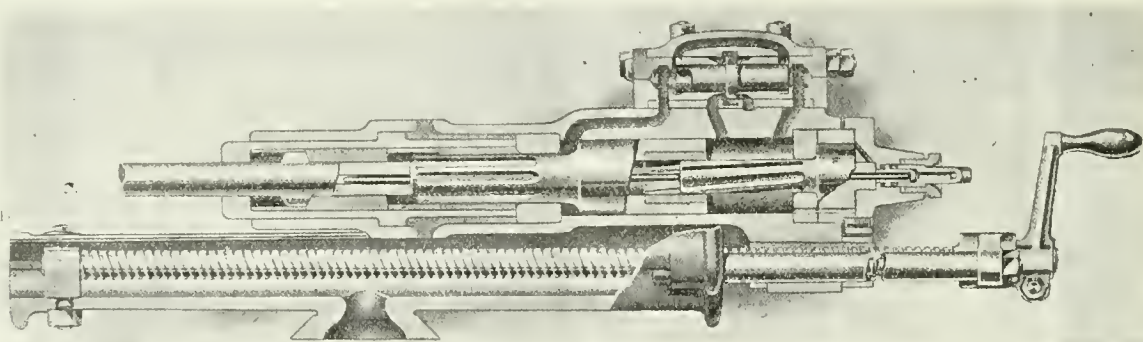


FIG. J.—HOLMAN CRADLE HAMMER DRILL WITH WATER ATTACHMENT.

Characteristics: Light spool valve (cylindrically seated) axial water feed; rille bar at back of piston for automatic rotation of steel; using lug steel similar to Leyner; chuck of special design with renewable rotation ribs.

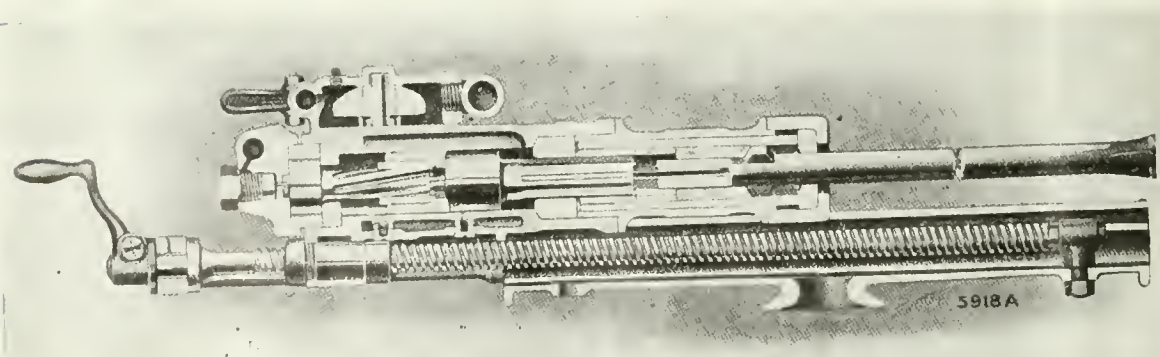


FIG. K.—LEYNER CRADLE HAMMER DRILL WITH WATER ATTACHMENT.

Characteristics: Butterfly valve axial water feed; rille bar for automatic rotation back of piston; using 1½ in. hollow steel with lugs; adequate oiler capacity.

taking a high degree of hardness, as owing to the very high piston speed employed in these little machines, all parts subject to wear have to be case-hardened and ground.

Pistons.—These have to be made of special quality steel and can be divided into two types; those which are solid in structure, *i.e.*, where the rotation device is provided on the smaller diameter of piston—in this case the rotation is generally arranged at the front end of the machine—or the hollow type in which the piston head has to be bored out to give clearance for rifle bar mechanism. The slides you have already seen illustrating the varying types of rotation, either consist of a modification of a rifle bar which is sometimes arranged at the front or at rear of the machine, or in some cases, such as in the Schmucker and its modern example, namely, the Bull Moose, which consists of a cross piston connected by some form of ratchet gear direct to the chuck. In a large number of the latter type of machines, the rotation does not synchronise with the blow. The best results are obtained where the rotation is synchronised with the blow and where the rotation is arranged to be on the backward stroke of the piston. With reference to the speed of rotation I have found that if this is increased to too great an extent, that although you get faster drilling, the gauge of the steel wears away very quickly, and also there is a considerable wear on the longitudinal flutes of the piston.

Valves.—Valves are of many different types and shapes, but can generally be arranged in two classes: (1) the positive seated type, such as the Ingersoll Butterfly, the "Meco" flap and the Flottman ball; (2) cylindrical seated valves, such as used in the Holman, the Boyer and the Cleveland. The cylindrical shell valve, such as the Boyer and Cleveland, gives the largest port opening with the shortest stroke. The cylindrical valve, such as the Holman, gives a good port opening, but the edges of the valve ribs and ports wear away due to the rush of air passing into and out of the cylinder. With positive seated valves the longer the valves run the better the seating, and also the valve opening can be changed within reason by putting in longer or shorter seats, or thinner valves. The disadvantages are that after a time they beat too far into the seat and the

machine blows across the portage. This beating-in of the valve seat can be overcome by curving the valve seat to correspond with the shape of the valve.

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NOTICE TO SHAREHOLDERS.

NOTICE IS HEREBY GIVEN that the Twenty-second Ordinary General Meeting of Shareholders for the year ended 31st July, 1919, will be held in the Board Room, The Corner House, Johannesburg, ON WEDNESDAY, 17th DECEMBER, 1919, at 3 p.m., for the following business:—

1. To receive and consider the Balance Sheet and Accounts for the year ended 31st July, 1919, and the Reports of the Directors and Auditors.
2. To elect Directors in the place of those retiring, in accordance with the provisions of the Company's Articles of Association.
3. To determine the remuneration of the Auditors for the past audit, and to appoint Auditors for the ensuing year.
4. To transact any other business which may be transacted at an Ordinary General Meeting, or which is brought under consideration by the Report of the Directors.

The Share Transfer Books of the Company will be closed from the 10th December to the 17th December, 1919, both days inclusive.

By Order of the Board,

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Per C. L. READ.

Head Office, The Corner House,
Johannesburg, 28th July, 1919.

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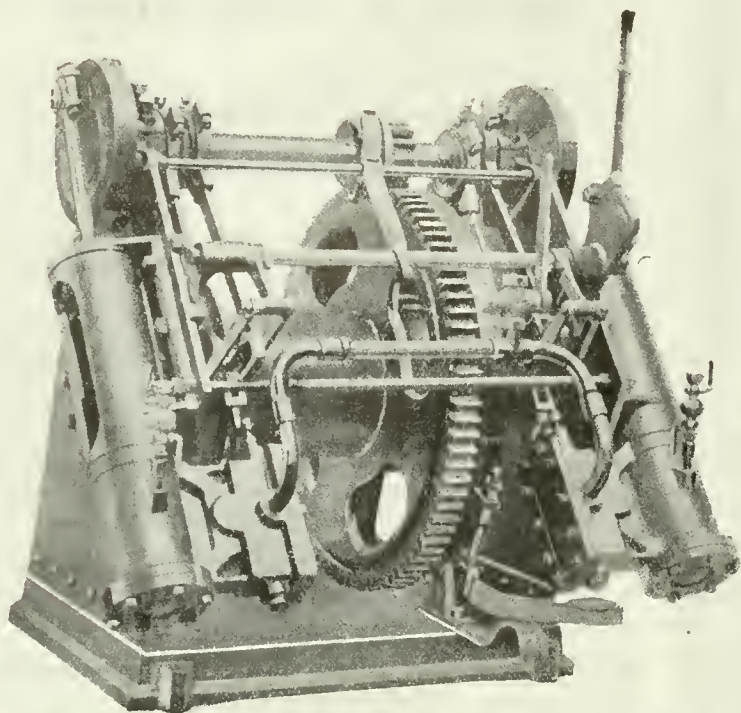
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Notes and News

Gold Fields' New Constitution.

A meeting of shareholders of the Consolidated Gold Fields of South Africa passed a resolution whereby the concern will be taken over by a new company with the title of the Consolidated Gold Fields, by which step the company will be enabled to take up new remunerative business; Lord Harris, who presided, said this course was absolutely unavoidable. Indeed, it was the only way in which the liquid assets of the shareholders could be adequately used for their benefit.

* * * *

The Flight from England to South Africa.

The Mayor of Johannesburg and the Transvaal Aero Union are giving hearty support to the proposed reliability flight from England to South Africa. The trial is being organised by the "Daily Express," which is offering a prize of £10,000 for a flight from England to India and one from England to South Africa. These will be test flights and not merely flights of endurance, and precautions will be taken to see that the conditions are complied with at both ends.

* * * *

Northern Transvaal Lands.

The report of the Northern Transvaal Lands Company for 1918 states that during the year the directors have sold four farms, comprising 18,675 acres, at favourable prices, the proceeds of which, amounting to £2,997, have been credited to farms account. Since the close of the books four other farms, of 14,929 acres in all, have been sold for upwards of £5,000, and negotiations are in progress for the sale of several others. At the date of the accounts the company owned the freehold and mineral rights over a total of 115,930 morgen (approximately 244,615 acres), the whole mineral rights over 42,171 acres, and three-fourths of the mineral rights over 5,148 acres, a total of 291,934 acres.

* * * *

South African Orders for U.S.

In the House of Commons recently Mr. Houston asked whether the South African Government had recently placed in the United States orders for 44,000 tons of rails, 1,000 cars, 250 trucks, and, in the United States and Canada, 70 large locomotives, and whether the reasons could be stated for placing this important order for material in America instead of in Great Britain. Mr. Amery said some of the orders mentioned were placed before the armistice. As to the locomotives ordered since the armistice, the British offer, both in respect of price and date of delivery, was so unfavourable that the South African authorities felt themselves obliged to go elsewhere. Orders for 40 locomotives were placed with Canada. The policy of the Government was preference within the Empire. The country could not expect preference from other parts of the Empire except as against foreigners.

* * * *

The Life of the City and Suburban.

The manager of the City and Suburban Mine (Mr. H. Hilton) stated to the Low Grade Mines Commission that the profit in 1917 was £159,472, and in 1918 it dropped to £47,000, and for the six months ended June, 1919, there had been a loss of £19,363. The manager regarded the shortage of native labour as the most serious cause contributing to the present state of affairs. In an endeavour to meet the high working costs, an undue proportion of rich blocks of ground in lower levels was being mined. When that was exhausted it was highly improbable that profitable operations could be continued on lower grade ore remaining in upper levels, and the life of the mine would be considerably shortened. Witness said that in any circumstances the City and Suburban Mine would have to close down in a few years. If it were compelled to close now about £600,000 which would otherwise be spent on the Reef would be lost. Increased native labour would provide the chief means of keeping the mine going.

* * * *

Important New Corporation.

The amalgamation of several land investment companies with the South African Townships, Mining and Finance Corporation is announced, the latter being the new name of

the Witwatersrand Township, Estate and Finance Corporation, Limited, after purchasing the whole of the assets of the Pretoria Townships, Limited. The chairman in his speech at the extraordinary meeting of the shareholders in March referred to the very large and valuable land and share assets which the company was acquiring. It is now proposed to purchase the whole of the assets of African Farms, Limited, and South African Gold Mines, Limited, the Rhodesia and Union Farms, Mines, and Suburban Townships, Limited. All these companies possess very extensive land holdings and share investments. Meetings are now being called of all the interested companies for the purpose of passing the necessary resolutions, and for the purpose of dividing the present pound shares of the South African Townships into ten shilling shares.

* * * *

Henderson's Transvaal Estates.

The record profit shown by the accounts of the Henderson's Estates for 1917-18 was mainly due to share sales. For the year to March 31 last the profit on shares sold amounted to £17,435 less than in 1917-18, i.e., £28,570 against £46,005. However, dividends brought in £2,000 more, and other revenue an extra £1,200, and as expenses were reduced from £11,441 to £9,108, the net profit comes out about £12,000 less at £49,000. The allocation to reserve is reduced from £20,000 to £10,000, the dividend is maintained at 6 per cent. for the year, and the carry forward is reduced from £46,682 to £43,484. The company's principal assets consist of large shareholdings in the Tweefontein and Tweefontein United Collieries, a big interest in the Daggafontein Mines on the Eastern Rand, now in course of development, and extensive areas of farm lands and mineral rights in South Africa. The financial position is strong. Last year the influenza epidemic interfered considerably with coal production, and the reflection is expected to be seen in this year's results also. Given adequate labour, however, developments and equipment are sufficient to enable a very much larger monthly production than recently reported.

* * * *

Diamond and Income Tax Returns.

The detailed figures for the first four months of the current financial year from the Inland Revenue sources are not yet available, but attention may be drawn to the very promising figures recently published for the three months ending June 30. The export duty on diamonds, owing to the enormous demand in the United States, is far exceeding the anticipated yield. For the year the duty was expected to produce £800,000. In the first three months of the year it had actually yielded £306,000. The income tax, including normal, super and dividend taxes, was expected to produce in the twelve months £4,100,000, and of this, of course, by far the larger part is collected as a rule in the last three or four months of the financial year. But every year there is an overflow from the previous period. This has amounted in three months to no less than £822,000, which is about £150,000 more than the collections at the same date in 1918. Similarly, there has been a substantial overflow from the excess profits duty, the yield from which was credited last year to loan account, but is now taken into the revenue. Almost all the other revenue heads are yielding up to the amount of the estimates, and we have the general position that with the most productive months of the year, from a revenue point of view, still ahead, the inland revenue has already exceeded the estimate for the four months period by nearly £100,000.

* * * *

British Trade Commissioner.

His Majesty's Trade Commissioner is now installed in a new suite of rooms on the first floor of the Goldfields Buildings, Eloff Street. These rooms, six in number, include a comprehensive library and a record-room, in addition to the ordinary offices. The position of the building, at the Main Street corner, should be very convenient for the purpose for which they are intended, and when the necessary structural alterations have been completed, should allow of considerable expansion in the already arduous work now being carried on by Mr. Wickham and his staff.

State of the Diamond Trade.

There is no change to record in the condition of the diamond trade (says the "Financial News" in mail week). Things remain as before—i.e., both rough goods and brilliants are in as keen demand as ever. Possibly the recent buying of diamonds by the Germans and Austrians, in order to conceal wealth, imparted an unwonted activity in one or two centres on the Continent; but while there is a lull in such business, it makes no difference to the diamond market itself. Their demands were made on dealers after the diamonds had been sold by the trade, which, by the way, is not able to supply to the full its regular customers. The buying for hoarding purposes was merely an incident. American firms are still represented over here, and though the holiday season is opening, it cannot be said to have affected the trade in brilliants.

* * * *

Aviation Progress.

Interesting documents were received by the last mail by Colonel Armes, of the South African Aerial Navigation Company, in the form of the first "certificates of airworthiness" issued for South Africa. The certificates are issued by the British Air Ministry, in terms of the Air Navigation Acts of 1911 and 1919, and certify that the aircraft to which they relate—in this case two-seater and three-seater Avros—are "airworthy for the conveyance of passengers or goods" under various defined standards. The certificates hold good for 200 flying hours or until July, 1920, "after which the aircraft must be completely overhauled to the satisfaction of the Secretary of State."

* * * *

South African Breweries.

In spite of the difficulties caused by the scarcity of supplies and the depletion of staffs, the South African Breweries, Ltd., has done very well during the war, and the report for the year ended 31st March last shows a further increase in prosperity. The net profits amounted to £230,400, which compares with £179,100 for the previous year, and the dividend is raised from 11½ per cent. to 13¼ per cent., free of tax. A sum of £6,200 is added to the special reserve against trade investments, and a balance of £46,000 carried forward. The new maltings at Johannesburg have been completed, and have proved a great success, having provided large quantities of good malt which would otherwise have been unobtainable, while at the same time encouraging the local farmers to increase their crops of barley. To counteract the shortage of bottles also a controlling interest has been acquired in the Union Glass, Ltd., a local concern with premises at Dundee, Natal.

* * * *

Transvaal and Rhodesian Estates.

The report of the Transvaal and Rhodesian Estates for 1918 states that the issued capital is now £429,005. The operations for the year resulted in a profit of £17,947, which amount it is proposed to carry forward. It was necessary to utilise a certain portion of the £26,661 carried forward at December, 1917, for further writing off in connection with the reduction of capital. After allowing for this, the total now standing to the credit of the profit and loss account is £39,347. During the year the liabilities have been substantially reduced. Expenditure has been incurred on the Fred Mine and in the acquisition of interests in Nigerian tin and silver lead properties. The company engaged the services of Mr. J. R. Falconer to inspect and report upon its oil properties in Trinidad. Mr. Falconer recommends certain boring being undertaken on the freehold estate, and the company is in negotiation for the acquisition of further ground adjoining the leasehold properties.

* * * *

Selukwe Columbia in Liquidation.

A meeting of shareholders of the Selukwe Columbia Gold Mine is convened to consider a proposal to wind up the company. An official circular states that one tender only was received for the Wonderland property, and although the offer made was small, it was considered advisable to accept it. This leaves in the company's hands only a few claims,

the farm "Helvetia," of about 6,000 acres, and a certain amount of plant and machinery for disposal, and instructions have recently been sent to Bulawayo to realise these assets by offering them for sale by public auction. The company holds in London: Cash, £2,919; Treasury bills maturing 1st August, 1919, £21,000; total, £23,919; and a further amount should be received from Rhodesia in respect of moneys already due and from the sale of the remaining assets, the amount of which cannot at the moment be estimated.

* * * *

Bechuanaland Exploration.

The report of the Bechuanaland Exploration Company for the year ended 31st March, 1919, states that the capital of the company is £350,000, divided into 700,000 shares of 10s. each, of which 601,773 are issued, leaving 98,227 in reserve. The shares held in other companies which have been taken into the balance sheet at or under cost price amount to £145,889. A sum of £16,656 has been received in dividends and profit on shares sold. The company's land holding in Southern Rhodesia comprises 265,494 acres, of which about 227,350 acres are beneficially occupied. Assets as at the 31st March, 1919, stand at £417,815. After providing a sum of £1,016 for development and depreciation account, the net profit amounted to £21,786, which, added to the amount brought forward, makes a total of £24,667. The directors recommend the payment of a dividend of 7½ per cent., less tax, for the year.

* * * *

Rhodesian Mining Dividends.

The dividends paid by Rhodesian mining companies during the year ended 31st December last amounted to £615,640 as compared with £691,260 in 1917, showing a decrease of £75,620. The Shamva Mines has, however, since declared a further dividend for 1918 amounting to £30,000. The amount of dividends declared by Rhodesian development and miscellaneous companies in 1918 was £273,899 as against £154,232 in the previous year, being an increase of £119,667. Taking all Rhodesian dividends together there was a nett increase of £44,047 in 1918 as compared with 1917. The total cash dividends declared by Rhodesian mining companies up to 31st December, 1918, amounted to £5,902,987, and this figure does not take into account dividends declared by Rhodesian development and miscellaneous companies in cash or scrip amounting to over £2,900,000, nor dividends paid by Rhodesian mining syndicates.

* * * *

H.E. Proprietary (New).

The H.E. Proprietary annual report shows a surplus for 1918 of £7,770, which the directors propose should be added to general reserve account. The balance sheet is drawn up on same valuations as were placed on the assets in previous year's accounts. The subsidiary concerns in which the company is interested have for the most part deemed it advisable to restrict their dividends and to strengthen their reserves and reduce prior charges rather than to make large distributions. The benefit of this policy, the report states, will make itself felt in subsequent years. New Lisbon Berlyn, Ltd.: Steps are under consideration for resumption of work on this property. Estimated developed ore represents an assay value of £183,569 in gold, copper and silver, taking copper at £60 per ton and silver at 2s. per ounce. Provision of fresh working capital will have to be undertaken. Klippoortje No. 228 (Far Eastern Rand): A contract has been entered into with the owners of the adjoining farm Maraisdrift, viz., the Rhodesia Exploration Co., Ltd., and the Union and Rhodesian Trust, Ltd., which provides for the joint exploitation of the two properties and their ultimate amalgamation on flotation of a new company. It is provided that the company will have a capital of £1,250,000, of which 550,000 shares will represent the vendors' consideration, and the balance will be issued for working capital. The H.E. Proprietary (New), Ltd., as vendors of Klippoortje, will on flotation receive 231,000 shares of £1 each in the new company, and will have the right to subscribe a portion of the working capital.

TOPICS OF THE WEEK.

THE MINISTRY AND THE CRISIS IN THE MINING INDUSTRY.

PERHAPS it is too much to hope that Generals Botha and Smuts have found time to give any attention to the evidence being given daily before the Low-Grade Mines Commission. The question at issue is, nevertheless, quite the most important now before the country, and when the Ministers are allowed to enjoy a pause in the well-deserved tumult of welcome, they will, we trust, give it their first and undivided consideration. Meanwhile the mining industry continues to lay before the Commission the most weighty, cumulative evidence in support of the recommendations already advanced. Experts in every department of the industry have testified to the unwisdom of the present rigid legal colour bar, to the advantages of importing more native labour, recruited from beyond the present arbitrary line, and to the menace to the whole East Central and Central Rand from the water troubles consequent upon the closing down of the East Rand Proprietary. Thus Mr. Taberer, the foremost authority on the native races in South Africa, in examination by the Commissioners, said he did not think the native could rise sufficiently to compete with the intelligent white man, and though he would like to see the legal colour bar removed, he thought it would not affect the white man in the least. He did not suggest that more scope for the experienced native would in itself augment the native labour supply. The natives, he said, were organising to demand their rights, and he considered the situation grave. He considered the general conditions under which natives were employed on the Rand excellent, and that there was nothing resembling slavery, either mental or physical, in the terms and conditions under which they were engaged for the Rand. Natives said the same themselves. From this it will be seen that Mr. Taberer, who is the last to be an alarmist, agrees with Mr. Boyes, and other authorities quoted in these columns recently, in regard to the seriousness of the native unrest. Surely a sufficient case has now been made out for the relaxation of the legal colour bar restrictions contained in the Mining Regulations? Mr. Malan has the power to make the relaxation without further circumlocution, and it is earnestly to be hoped that the presence and moral support of his distinguished colleagues in the Cabinet will now strengthen him to take the step. During the past few days also striking evidence was led on behalf of the Chamber of Mines, the most important feature of which is that by closing down the E.R.P.M., other mines would be unable to cope with the surplus water, and "thus one after another the mines would be killed off, and unless measures are taken to prevent it, the process would continue to the Central Rand owing to the fact that the workings are connected and the pillars weakened and cut by faults right through to the Crown Mines." The statement urged that whether the E.R.P.M. closed down or not, operations of its pumping stations should be continued, and it is thought that Government might well come to the assistance of these mines in this connection. This point, the statement proceeds, demands most serious consideration, and a means must be devised for protecting the longer-lived mines of the deep level of the Central Rand from the flood of water which will accumulate as the mines in the eastern parts of this section close down, as they must eventually. The obviously sound thing to do is to dam the water back by sufficiently reliable barriers can be established rather than to cope with it by pumping. It is suggested that reliable barriers can be established at three places by building long concrete plugs into all the tunnels which have been made through three big dykes, namely, the Simmer Dyke, Treasury Dyke, and the South Goch Dyke. To meet the case, something apparently will have to be done in the nature of forming a special Mine Water Board on the lines of those operating in the English colliery districts. At any rate, it would seem that all the facts have now been presented by the industry in clear and what the Americans call "fool-proof" form. They show that the Government can do much, and the employees of the industry can do much, to meet the crisis. And they show that whatever is done must, if it is to be efficacious, be done quickly.

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BRILLIANT OUTLOOK FOR S.A. COAL EXPORT TRADE.

What Adequate Shipping and Rail Transport Will Mean—Generals Botha and Smuts on S.A. Prospects—Three Ships Acquired as a Start—To Compete in Every European Market—Our Coal Resources. Thirty-Six Thousand Million Tons!

SPEAKING at the public luncheon given in his honour, and in honour of General Smuts, at Capetown, General Botha referred to South Africa's needs in the matter of ocean transport, and also made the interesting announcement that General Smuts and himself and other friends had taken the responsibility of obtaining for this country three cargo boats, prizes of war, with a view to their being used in the transport of South African coal to oversea markets. The Premier expressed the hope that the British authorities would see the reasonableness of South Africa's claim, and give us not only these three ships, but all the thirteen German ships which had been taken in these waters during the war. We had begun in a small way, added the Premier, but we should continue on these lines, and see whether this experiment would be a paying one.

It is now clear that South Africa, given sufficient means of transport, stands to benefit by the existing British conditions in the coal trade. Sir Percy Fitzpatrick, in a recent speech in London, said he had been told that coal was then costing at the pit's mouth in England 22s. to 22s. 6d., with a rising tendency, and he affirmed that coal of the same heating value could be produced in countless millions of

tons, from 7s. downwards, in South Africa. The Transvaal is stated to possess 5,000 square miles of coal-bearing area as against about 3,250 in the other three provinces. The total tonnage estimated to be available has been put at 36,000,000,000. The coal export of the Union last year was 1,208,000 short tons (of 2,000lbs.), valued at £1,033,000, as compared with 856,000 short tons, of the value of £337,000, before the war. During the intervening period many new markets have been entered, considerable quantities having been sent to Argentina and Uruguay, as well as to the British East Indies and Egypt. Coal for bunker ing purposes shipped from South Africa last year totalled 1,276,000 short tons, as against 1,452,000 tons in 1913. The increased prices, however, caused the value to rise from £1,952,000 to £1,906,000. General Smuts now tells us that the South African possibilities in regard to coal were gone into while our representatives were in Europe, and it was found that we could deliver coal, if we had ships, in any European market on terms enabling us to compete with Newcastle or any other English coalfield—a state of things which, he said, implies nothing short of a revolution in the financial and industrial position of South Africa.

PERSONAL.

Mr. J. R. Leask, formerly Secretary for Finance, and lately acting High Commissioner for the Union in London, has joined the Board of the Central Mining and Investment Corporation, Ltd.

* * * *

Mr. James West, latterly mine manager to the Premier Diamond Mine, and formerly of De Beers Consolidated, Du Toit's Pan, Wesselson Mine, Kofffontein, and New Elands Mine, etc., has been appointed consulting engineer to the Makganyene Diamond Mines.

* * * *

The resignation is announced of Professor Dobson, D.S.O., general manager of the Gas, Electric Supply and Tramways Departments of the Johannesburg Municipality, and who is also director of many subsidiary undertakings, the reason assigned being that of inadequate remuneration.

* * * *

Professor W. Frecheville is retiring from the Chair of Mining in the Royal School of Mines, South Kensington. As his successor the governing body of the Imperial College of Science and Technology has appointed Professor F. W. Truscott, who for the past seven years has been Assistant Professor of Mining at South Kensington, and is well known in South Africa.

* * * *

With deep regret we have to chronicle the death of Mr. Max Langermann, who was intimately associated with the Rand's early life, having settled in the Transvaal many years before the Anglo-Boer war. He was a member of the famous Reform Committee in 1895, and was fined £2,000 and imprisoned by the Kruger Government. He was chairman of the Kensington Estates Co., of Johannesburg.

* * * *

The death has occurred at Maritzburg, at the age of 66, of Colonel John Weighton, who for many years was associated with the Natal Carbineers, the right wing of which he commanded some years ago. He went to Natal from Scotland about 1878, after serving in the Kafir wars of the Cape. For many years he had been secretary of the City and Suburban, the New Heriot and Nigel Gold Mining Companies, and his passing will be a great loss to the business world of the Natal capital.

The S.A. Institution of Engineers has decided to resume its annual dinners, and the first of these enjoyable functions since 1914 will be held on August 30.

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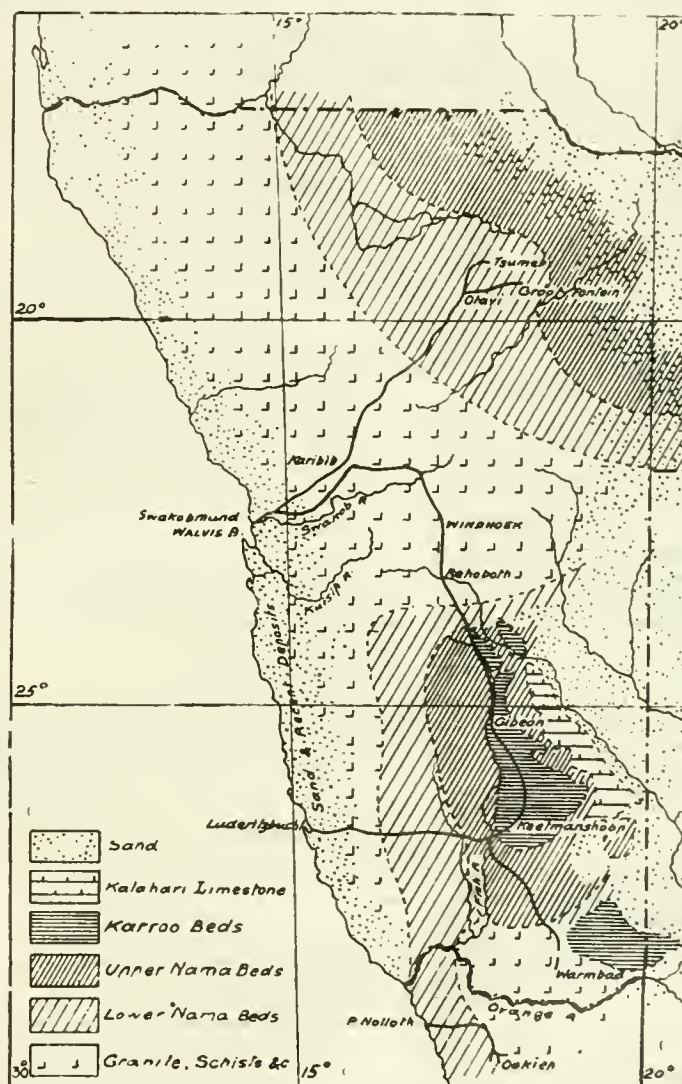
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IS THERE TO BE A SOUTH-WEST AFRICAN BOOM?

Many Prospectors Awaiting Passports—Coal Discovery Near Etosha—Big Possibilities in Tin, Copper, Gold and Diamonds,

In one of his speeches on arrival at the Cape the other day, General Smuts announced that he and General Botha had in their pockets the mandate to administer South-West Africa, which was lately German territory. The news cannot but be welcome to the big crowd of prospectors—the number is said to run to thousands—and others who are awaiting passports to enter the newly-acquired addition to the Union. In responsible quarters it is held that the next year will witness a remarkable boom in mining enterprise in the territory. Diamonds and copper, we know, are fairly well distributed throughout its length, but it is not too generally known that indications of gold, tin and other base metals are frequent. Moreover, it is reported that coal in payable quantities has been struck in the neighbourhood of Etosha, and since, at present, all the coal used has to be imported from the Union, the value of this find is obvious. More than one of our leading consulting engineers is said to be planning an early visit to the country, and when the passport restrictions are removed it is said that mining men will pour in from all quarters to examine the possibilities of the country. The best and most authoritative account of the minerals of South-West Africa is, of course, to be found in the work of Dr. P. A. Wagner, who, it will be remembered, was commissioned by the Union Government to write an exhaustive report. Mr. J. H. Langley, of the Mines Department, has also published a valuable review of the mineral resources of the country. Dr. Wagner says that owing mainly to the rapid development of its diamond industry, the value of the mineral production of South-West Africa, which in 1906 was practically nil, in the year 1913 amounted to £3,517,371, thus actually exceeding by a considerable margin that of Southern Rhodesia for the same period. It must, however, be pointed out in connection with this truly remarkable advance that the 1913 aggregate was abnormal, as there was during that year an over-production of diamonds. Only some 87 per cent. of the stones recovered were as a matter of fact sold, and in 1914 the diamond output was to have been reduced by almost 30 per cent. Even so, if the returns for the first six months of 1914 of the principal mines and diggings in the Union be taken as a criterion, the territory would still have ranked next to Griqualand West, the most important diamond producing region in the world. Apart from the Luderitz Bay and Angra Pequena diamond fields, the rich copper and lead deposits which are being exploited with conspicuous success at Tsumeb and several other localities in the Grootfontein district, the Kalb Mines and one or two lesser copper occurrences, prospecting and mining operations in South-West Africa have not so far realised expectations. The country has, however, up to the present received very little attention from experienced prospectors, and when it is remembered that the Luderitz Bay diamond fields were accidentally discovered in an area that had been examined by geologists and miners, and condemned as valueless, and that immense tracts, favourable geologically to the occurrence of mineral deposits, are still virgin ground, there is every reason for optimism in regard to its potential mineral wealth and resources. A highly interesting chapter of Dr. Wagner's work is devoted to economic geology and the mineral industry. Up to the war, neither gold nor coal had

been discovered in workable quantity. Copper mining provides, after diamond mining, the most important industry of South-West Africa. Copper deposits occur and have been opened up at quite a number of widely separated localities. The various occurrences which have been examined may be classified as follows: (1) Deposits in the Otavi dolomite, in which copper is associated with lead; (2) Magnetic deposits in which copper minerals occur as segregation in pegmatite, aplite and granite; (3) Pegmatite quartz veins; (4) Quartz veins; (5) Impregnation deposits in mica schist.



GEOLOGICAL SKETCH MAP OF SOUTH-WEST AFRICA.

GOLD OCCURRENCES.

In regard to gold, Dr. Wagner writes:—

No workable occurrence of gold has up to the present been located in South-West Africa, and the rich auriferous deposits, reports of which led Willem van Reenen in 1791 to seek his fortune in Great Namaqualand, still await discovery. A series of auriferous quartz veins were opened up shortly before the war to the west of Kunjas, in the northern portion of the Bethany district. The country rock is slate, belonging to the lower Nama beds, and the strike of the veins is from west to east. Some fairly rich ore occurs, but, according to Dr. C. Krause, it is doubtful whether any of the veins are worthy of exploitation. The same applies to the veins located in the Kaokoveld near Khorichas, to the south-west of Franzfontein, at Chou

MINING AND INDUSTRIAL

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Replies to "ROFFRID," c/o this Journal.

bendus, and to the south-west of that locality. Gold occurs in association with copper ore in the Henderson Mine, in the Spitzkopjes, and Rheboboth veins, and in a copper prospect in the Chnos Mountains. According to Rimann, the ancient granite exposed to the south of Rheboboth contains small quantities of auriferous pyrite, which circumstance probably accounts for the fact that the basal conglomerates of the Naama system are slightly auriferous in this area.

Small nuggets of gold are occasionally found in the diamond-bearing "gravel" of the Lubek and Dresden claims, to the south-east of Luderitz, and also in the stamiferous gravels and "float" of the Eerongo tinfield. It is believed that much more has been learned regarding the mineral occurrences of the country as the result of the passage of troops through the outlying districts since Dr. Wagner wrote his report.

THE OUTLOOK FOR THE KATANGA MINES.

Extensive New Works in Progress—Big Expenditure Undertaken—Copper Production During the War.

The general meeting of shareholders of the Union Minière du Haut Katanga was held recently at Brussels under the chairmanship of M. Jean Jadot. Commenting on the report, the chairman said that, as was stated therein, it had been impossible to submit final accounts, though these would be prepared immediately circumstances permitted; but he himself and his colleagues considered it preferable to distribute a moderate dividend, having regard to the nature of the industry in which the company was engaged and the continual fluctuations to which their product was susceptible. There was also to be considered the fact that enormous expenditure would still be necessary in order to complete the programme of development upon which they were engaged. These circumstances prevented their increasing the dividend. The Government of the Colony, the Tanganyika Concessions and the Zambesia Exploring Company, who together held 70 per cent. of the share capital of the company, had agreed upon the desirability of creating a special fund by means of drawing on the profits so far as those profits were available.

The distribution was not due entirely to the exaggerated prices obtained for copper during the war, for if, on the one hand, the company had benefited from the high level of the metal, on the other abnormal cost of production and excessive expenses had had to be met in carrying out the new installations made during the war.

WAR TIME DEVELOPMENT.

The Chairman dealt briefly with the development of the company since its foundation. From 1916-1918 boring was proceeded with at the West Kambove property and the calcareous vein at Kakontwe. In 1919 they hoped to be able to carry out boring operations in respect of four other mines of the group at Elisabethville, Kambove and Lunshia. The report of Mr. Wheeler indicated the existence in the mines prospect of considerable veins of minerals bearing from 6½ per cent. to 7 per cent. of rich ore and up to 15 per cent. of poorer quality ore. Continuing, the Chairman said: The mines situated near to the railway in the south-eastern section of the concession will by themselves, according to Mr. Wheeler, yield a tonnage amply sufficient to justify the erection of a large works for treatment by washing. Very soon the dolomite at the Star will be replaced by limestone coming from a vein recently discovered at Kakontwe. The coke required for the furnaces has been obtained partly from the Wankie Collieries—50,000 tons in 1918—and partly from the coke ovens of the company from coal from the Wankie Collieries—30,000 tons. These collieries are at present engaged upon the task of completing their installations of coke ovens and washing plant, and it is hoped that they will be able to supply a sufficient quantity of fuel. Work at the tin mine at Busanga, which was stopped at the beginning of the war, was restarted in 1918.

IMPROVEMENT IN PRODUCTION.

Production has shown a steady improvement up to the 1918 period, when the difficulty of transport prevented the company from taking full advantage of the new installations. In addition, production in 1918 was greatly reduced by the influenza epidemic, which involved a complete cessation at the works during one month. Production for the four years, from 1915 to 1918, was respectively as follows: 14,041 tons, 22,167 tons, 27,462 tons and 20,238 tons. For the first six months of 1919 monthly outputs were as follow: 1,484 tons, 1,762 tons, 1,490 tons, 1,966 tons, 956 tons and 2,035 tons. The total capacity of the seven furnaces may be estimated at about 40,000 tons a year. The cost of production, which was about 700 to 800 francs on rail at the works, has undergone enormous increases owing to the rise in the cost of labour and materials. In addition, freights, which were about 35 francs per ton of copper before the war, had risen to over 200 francs in 1918; insurance, which cost 3 or 4 francs per ton, reached 165 francs during the war. As a matter of fact, the cost of production at the works fluctuated between 1,000 and 1,200 francs, apart from general charges and depreciation, which, having regard to the course of the copper market, left a satisfactory margin of profit. To arrive at a

monthly production of 3,000 tons of copper, 10,000 to 12,000 workers are required. The actual effectives have numbered about 7,000 natives during these last years. The company has made great financial sacrifices to improve the conditions of the native workmen, but the influenza epidemic of October and November last unfortunately upset the situation from a health standpoint, though it had become very good. The railway is actually working from the frontier to Bakana over a distance of 730 kilometres. In order to carry the enormous mineral traffic anticipated in the future, the railway will have to be greatly enlarged. The construction of a section of 80 kilometres along the Lualaba is projected to reach a point of the river accessible in all seasons to boats of considerable tonnage. The needs of the railways will necessitate a considerable financial effort on the part of the Colony, but it is indispensable to its future. The mineral resources of Katanga are no longer a question for doubt to anybody. Replying to questions, the Chairman said the sums necessary for depreciation had been very heavy and must continue to be so having regard to the fact that locomotives had been bought at a price four times that of pre-war days, water-jackets eight times as much and rails at 1,200 francs a ton, as against 450 francs. The concentration works in course of construction would cost 20 to 25 million francs. It was impossible to say what would be the cost of production for some months ahead. At the present time the company was living from day to day, as, in fact, every other industrial undertaking was doing.

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PROGRESS ON THE "C.M.S." SUBSIDIARIES.

Good Returns from Springs, Brakpan, West Springs and Daggafontein.

SPRINGS MINES.

In their report for the quarter ended June 30 the directors of the Springs Mines state: The linear development for the quarter amounted to 5,273 feet, of which 3,890 feet were on reef averaging 20'00 dwts. over a reef width of 18'18 inches. Of the footage on reef 2,565 feet, equivalent to 65.9 per cent., were in payable areas, and averaged 22'33 dwts. over 22'95 inches. The valuation of the payable ore reserve as at June 30, 1919, is as follows: 2,243,934 tons, of an average assay value of 8'73 dwts. over an average stoping width of 62'2 inches. The above figures confirm the estimate made by the consulting engineer, and published for the information of shareholders on May 13, 1919. The annual report for 1918 stated that in addition to the payable ore reserve there stands in the mine a large tonnage of ore of an estimated average assay value of 4'13 dwts. over 52 inches stope width. No. 3 shaft was sunk 616 feet during the quarter, making a total depth of 1,462 feet, of which 1,426 feet were timbered. During the period under review, debentures of the nominal value of £535 were purchased. The expenditure on lease area capital account for the quarter amounted to £33,326 11s. Judgment in the test case in regard to the legality of the levy under the Provincial Gold Profits Tax Ordinance, 1918, having been given in favour of the Provincial Council, the estimated taxation for the year 1918, amounting to £7,356 15s. 7d., was paid during the quarter. Provision was made for this amount in the accounts for the year ended 31st December, 1918. After reserving for taxation and debenture interest, as well as the percentage of profits payable to the Union Government under the mineral lease, the estimated unappropriated profit at June 30 amounted to £335,610 10s. 4d., being an increase of £125,755 1s. 4d. on the figure at December 31, 1918. This amount is subject to the annual adjustment of the development suspense account. The total expenditure on the original equipment in excess of funds provided now stands at £349,272 10s. 9d., having been slightly reduced by sales of plant. Owing to the decrease in the freight and insurance rates on gold shipments and to the realisation during the period under review of gold deposited with the bank before the decrease in the rate became operative, the charges on which had been allowed for at the old rates, the additional gold realisation charges showed a net credit for the quarter to June 30 of £1,173 8s. 11d. In order to strengthen the financial position of the company, the directors decided to pass the dividend for the half-year.

BRAKPAN MINES.

The directors of the Brakpan Mines report: The linear development for the quarter amounted to 4,837 feet, of which 3,905 feet were on reef averaging 8'46 dwts. over a reef width of 38'15 inches. Of the footage on reef 2,180 feet, equivalent to 55.8 per cent., were in payable areas and averaged 12'41 dwts. over 40'21 inches. The payable ore reserve as at June 30, 1919, was estimated at 2,378,765 tons of an average assay value of 8'8 dwts. per ton, over an average stoping width of 69 inches. This is a decrease of 339,235 tons as compared with the previous estimate, the average assay value of the total being 0'1 dwt. per ton higher and the stoping width 1 inch wider than that estimated at the beginning of the year. The inch-dwts. figure is 606, as against 594. The larger portion of the decrease in tonnage is accounted for as follows: (a) In view of the prevailing high standard of working costs the minimum pay limit has been raised from 4 dwts. to 4½ dwts., which has involved the elimination of 101,000 tons averaging 4'17 dwts. (b) The tonnage mined from the payable ore reserve exceeded the estimated tonnage developed for the six months by 55,000 tons. (c) The elimination of areas in which additional subsidiary development is necessary to more definitely determine the value. In respect to the tonnage not included in the payable ore reserve, it is pointed out that selective mining in the areas classed as unpayable yields approximately 100,000 tons per year of ore having an average value of about 5 dwts. No. 3 Circular Shaft.—During the year a distance of 511 feet was sunk, making the total depth of the shaft 1,236 feet, of which 1,176 feet are bricked or ringed. No. 4 Circular Shaft.—The footage sunk during the quarter was 547 feet, making the total depth of the shaft 1,853 feet, of which 1,761 feet are bricked or ringed. Under the agreement in connection with the acquisition of the Brakpan lease area the Consolidated Mines Selection Company, Ltd., took up, during the period under review, 15,500 shares in the unissued capital of the company at £5 per share. The issued capital now therefore stands at £806,600, and 43,400 shares have still to be taken up at £5 per share under the above-mentioned agreement. The capital expenditure incurred during the quarter amounted to £37,968. After reserving for taxation as well as the percentage of profits payable in connection with the acquisition of the Brakpan lease and Schapenrust claims, and also providing for the dividend for the half-year to June 30, the estimated unappropriated profit at June 30, 1919, stood at £901,948 4s. 8d., being an increase of £50,716 0s. 2d. on the figure at December 31, 1918. This total is subject to the annual adjustment of the development suspense account. As foreshadowed by the Chairman at the annual general meeting, a gold reserve has been established, and at June 30 this stood at 7,309 fine ozs., valued at £30,697 10s., made up as follows: Excess gold taken from plant, 5,846 fine ozs.; added during May, 797 fine ozs.; added during June, 666 fine ozs.; total, 7,309 fine ozs. Owing to the decrease in the freight and insurance rates on gold shipments and to the realisation during the period under review of gold deposited with the bank before the decrease in the rate became

operative, the charges on which had been allowed for at the old rate, the additional gold realisation charges showed a net credit for the quarter to June 30 of £985 2s. 4d. Judgment in the test case in regard to the legality of the levy under the Provincial Gold Profits Tax Ordinance, 1918, having been given in favour of the Provincial Council, the estimated taxation for the year 1918, amounting to £6,232 12s. 7d., was paid during the quarter. Provision was made for this amount in the accounts for the year ended December 31, 1918.

DAGGAFONTEIN MINES.

Of the footage sampled during the quarter in the Daggafontein Mines, 33½ per cent. showed payable assays, and averaged 56'09 dwts. over 6'39 inches. A similar analysis of the total development to date showed 47.6 per cent. of payable footage, assaying 28'40 dwts. over 17'08 inches. No. 2 Shaft.—During the quarter 511 feet of sinking was accomplished, making the total depth of the shaft at the end of the quarter 2,076 feet, of which 2,047 feet are timbered. Following on the adoption of a vigorous policy in connection with the equipment and exploitation of the mine, good progress has been made. The motors and pumps for the 3,000 pump station in No. 1 shaft have now arrived on the property, and electric cables for same are being installed in the shaft. The necessary 8in. water column is due to arrive shortly. Work on the surface electric equipment is in hand. Three blocks of workmen's single quarters are practically complete. Work has commenced on 20 five-room cottages. A main road between Nos. 1 and 2 shafts is being constructed. The erection of the workshops at No. 2 shaft will be taken in hand by August 15, the principal items of shop equipment having been delivered. The Rand Water Board purchased 29,871,000 gallons of water during the quarter. During the quarter 246,924 ordinary shares of £1 each were allotted in respect of options exercised, and the issued capital at June 30, 1919, stood at £947,633. There remain 400 shares still to be allotted ex options exercised.

WEST SPRINGS MINES.

During the quarter the collar set and the erection of the headgear and bins were completed at No. 1 shaft. Sinking operations were commenced with temporary equipment, and the shaft had been sunk and close timbered to a depth of 58 feet. The boiler plant and compressor were well in hand at June 30. At date the erection of one permanent winder is completed, and is being used for sinking operations. The above equipment will permit of sinking being carried on at a normal rate. By utilising the temporary equipment No. 2 shaft was sunk a further 160 feet during the quarter, making the total depth 240 feet, of which 224 feet are timbered. The green dyke has been passed through, and dolomite was encountered at a depth of 175 feet. The dolomite water at present is not excessive and amounts to approximately 120,000 gallons per diem. The footage sunk in this shaft will be nominal pending the erection of the permanent headgear and winding engine, which are expected to be available about the middle of August. Details of the quarter's development, together with a summary of the work so far accomplished by Springs Mines, Ltd., in West Springs property, under the working agreement, are as detailed below:—East haulage, west face: Footage sampled, 215 feet; reef width, 29'49 inches; assay value, 10.51 dwts. For quarter: Footage sampled, 215 feet; reef width, 29'49 inches; assay value, 10.51 dwts. Previously reported: Footage sampled, 395 feet; reef width, 16'68 inches; assay value, 2.51 dwts. Totals and averages: Footage sampled, 610 feet; reef width, 21'20 inches; assay value, 6.43 dwts. Payable values, which still continue, were encountered in the east haulage during April. The monthly figures show continuous improvement in the width and value of reef with the advance of the heading. The strike in the building trades having been settled, construction work has been proceeded with and excellent progress made with the erection of plant and housing accommodation.

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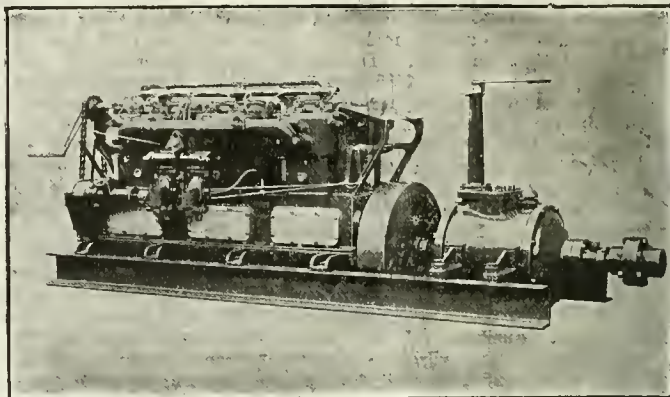
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The Caisson System of Diamond Recovery.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—In your issue of 26th July you publish a paragraph of the possibilities of the deep-water diamonds, in which you state that a Mr. F. M. Cox is the originator of the idea of attempting to recover diamonds from the pools of the Vaal River. I would like to point out that "The Macadam Alluvial Diamond Syndicate" attempted to recover diamonds from the Vaal by means of a caisson in 1907, and although the prospect looked promising, the venture proved a failure. Mr. F. M. Cox a year or so later took over this caisson, with the same results.

In 1913 (as per your issue of 1st February) another syndicate was formed, "The Caisson Diamond Syndicate," to add another attempt to those that had already been made.

You will therefore see, Sir, that the caisson theory for recovering diamonds from the Vaal is far from new.—Yours faithfully,

J. H. ANSTRUTHER MACADAM.

11, Jacoba Street, Troyeville, Johannesburg,
13th August, 1919.

The Kalahari Scheme: Professor Schwarz's Views.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—Mr. A. Karlsen has raised certain points connected with the Kalahari scheme, which have been answered in the various articles written in connection with the matter, but as your readers may not have seen these, may I shortly recapitulate my position with reference to them? In the first place, do the great lakes of Central Africa produce luxuriant vegetation around them? I need not labour the point, but the answer is that they do. Secondly, have there been large lakes in the Northern Kalahari, and did they, when in existence, produce luxuriant vegetation around them? From the time of Livingstone the proofs of the former existence of the lakes have been known and accepted, and the forests of dead trees along the courses of the rivers that ran out of the lakes show that there was at no very distant date abundant water, and consequently vegetation suited to the climate, throughout the Kalahari. Thirdly, when the lakes dried up, did the climate of South Africa become drier? The lakes dried up in about 1820, according to Chapman; at that time the Karroo swarmed with countless herds of big game, hippopotamus swarmed in the rivers even near Capetown and Port Elizabeth, and the whole of South Africa, though subject to droughts, enjoyed periods of plentiful rainfall. I have the records of the rainfall in the eastern districts for the last 45 years: 1875-1896, eight drought years, eight normal years, six good years; 1897-1918, 16 drought years, four normal years, two good years. This record at least shows that the droughts are becoming more and more pronounced, and the good years becoming fewer and fewer. The last of the good years was produced by the temporary reconstruction of the Kalahari lakes due to the abnormal floods in the Barotsi Valley.

The country has also become colder. We find tropical shells in the estuary of the Zwartkops, at Port Elizabeth, embedded in the mud in such a way that we can say certainly that they were living not so very long ago, but we have now to seek their living representatives up in the Mozambique channel. The cause of the increased coldness of the country is not to be sought in Antarctic ice, nor in astronomical changes. The procession of the equinoxes was

at one time thought to be a potent factor in climatic changes, but after a quarter of a century of controversy the net result was to establish the fact that the various astronomical causes neutralised one another. The shifting of the earth's axis was then brought forward. Luckily, we have a determination by Eratosthenes of the latitude of Syene, or as it is now called, Assuan, in about 250 B.C.; it was then exactly on the Tropic of Cancer, now it is about half a degree from it, so that in 2,170 years there has been an alteration of half a degree, not enough to make any appreciable difference during a space of a few hundred years. The increased coldness of the country is due to the absence of a thermal blanket produced by water vapour in the atmosphere. Arrhenius has shown that the amount of carbon dioxide and water vapour in the atmosphere are mutually dependent, and to decrease one is to automatically decrease the other. A total clearing of the atmosphere of carbon dioxide from the earth's atmosphere would reduce the temperature of the globe throughout by 14.6 degrees C., and the reduction of the water vapour, following as a secondary effect, would induce a fall of 12.5 degrees C., or 27.1 degrees C. (48.8 degrees Fahrenheit) in all. Conversely, once the Kalahari lakes are reconstructed the temperature of South Africa will revert to what it formerly was, because the heat received by the rays of the sun would be absorbed by the denser atmosphere, and the intense radiation during the night would be largely stopped.

Afforestation cannot be carried out largely under present conditions as the droughts kill the young trees, and even the old ones that have come down to us from more favourable times are dying out. I quite agree that where possible it will pay in every way to plant forests. The best tree for the uplands was discovered by me, and actually bears my name, *Callitris Schwarzii*, Marloth. But before we can precipitate moisture from the atmosphere by trees, or by artificial means, there must be added to the atmosphere some moisture for the purpose.

In regard to the apparent discrepancy between my estimate of 15,000 square miles for the reconstructed Makarikari Lake and the area of the present depressions, I have shown that these latter are merely the bottoms of a vastly larger depression, just as the Etosha Pan is merely a portion of the old lake area. The Etosha Pan has no brak at all in it, and as for the Soa and Ntvetwe Pans, the bottoms of the larger Makarikari, although they are encrusted by saline deposits, nevertheless, directly water flows out of them, the salt will disappear. The Great Salt Lake of Utah was fresh when the Colorado River ran out of it, and it only became salt when the level of the water dropped below the lip.

E. H. L. SCHWARZ.

Oak Lodge, Hill Street, Grahamstown.
August 12th, 1919.

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INCREASED GOLD OUTPUT FOR JULY.

23,118 Ozs. Higher—Better Native Labour Position—Detailed Returns.

In July the Transvaal mines produced 725,497 fine ozs. gold, valued at £3,081,713, being an increase of 23,118 ozs., value £98,198, compared with the shorter month of June. For the Witwatersrand and the outside districts the figures are as follow:—

WITWATERSRAND		
	Ozs.	Value.
July	705,523	£2,996,869
June	682,603	2,899,511
Increase	22,920	97,355
OUTSIDE DISTRICTS.		
July	19,974	84,844
June	19,776	84,001
Increase	198	843
GRAND TOTAL.		
July	725,497	3,081,713
June	702,379	2,983,515
Increase	23,118	98,198

The number of stamps in use on the Rand mines in July was 27 less than in June, while the number at work in the outside districts shows an increase of 10. There was a further slight improvement in the native labour position.

STAMP POSITION.

The following are the official figures regarding the stamp position:—

	Rand.	Outside.	Total.
July	7,917	305	8,222
June	7,944	295	8,239
Increase		10	
Decrease	27		17

NATIVE LABOUR.

The native labour figures for the past three months are as follow:—

	May.	June.	July.
On gold mines	173,376	172,505	173,613
On coal mines	12,232	12,544	12,453
On diamond mines	5,939	5,831	3,736
	191,547	190,880	191,802

GROUP PROFITS.

	May.	June.	July.
Central Mining	271,519	259,789	267,893
Barnato	190,416	184,687	194,398
Gold Fields	7,207	17,944	26,166
General Mining	27,394	27,685	25,130
Mines Selection	53,663	50,308	41,003
Union Corporation	75,341	76,549	77,881
Totals	625,540	616,962	632,471

COMPANY RETURNS.

WITWATERSRAND.

	Value. £	Increase. £	Decrease. £
Aurora West	13,695	536	—
Bantjes	867	—	310
Brakpan	93,866	1,818	—
City and Suburban	31,327	3,377	—
City Deep	108,109	13,656	—
Con. Langlaagte	55,420	1,138	—
Con. Main Reef	74,395	1,410	—
Crown Mines	243,658	8,665	—
Durban Roodepoort Deep ..	11,511	—	17,509
E.R.P.M.	151,007	3,989	—
Ferreira Deep	51,164	170	—
Geduld Prop.	65,500	—	140
Geldenhuis Deep	58,525	620	—
Ginsberg	—	—	9,264
Government Areas	212,119	7,523	—
Jupiter	28,001	3,811	—
Knight Central	31,289	4,584	—
Knights Deep	77,221	—	272
Langlaagte Estate	50,280	985	—
Luipaardsvlei	22,309	132	—
Meyer and Charlton	41,084	281	—
Modder B.	123,346	2,107	—
Modder Deep	95,842	2,035	—
New Goch	14,391	—	446
New Heriot	16,677	642	—
New Kleinfontein	69,115	1,827	—
New Modder	174,989	1,066	—
New Primrose	18,639	573	—
New Unified	12,017	399	—
Nourse Mines	54,137	403	—
Princess	27,223	1,444	—
Randfontein Central	177,976	6,856	—
Robinson Deep	78,676	10,997	—
Roodepoort United	22,721	454	—
Rose Deep	65,054	4,970	—
Robinson	43,862	8,071	—
Simmer and Jack	60,755	—	336
Simmer Deep	51,160	5,340	—
Springs Mines	66,286	2,727	—
Van Ryn Estate	34,513	—	420
Van Ryn Deep	107,990	8,024	—
Village Deep	64,761	2,812	—
Village Main	25,983	3,653	—
West Rand Cons.	39,555	1,967	—
Witwatersrand	41,640	798	—
Wit. Deep	36,874	535	—
Wolluter	37,057	—	2,324
Miscellaneous	14,186	7,981	—

OUTSIDE DISTRICTS.

	£	£	£
	Value.	Increase.	Decrease.
Sub Nigel	28,511	591	—
Barrett	775	31	—
Glynn's Lydenburg	6,996	510	—
T.G.M. Estates	26,621	400	—
Miscellaneous	21,941	—	689

MONTHLY RETURNS.

	1918. Ozs.	1919. Ozs.
January	711,182	676,059
February	659,759	636,728
March	696,281	712,379
April	717,099	694,941
May	741,317	724,995
June	727,696	702,379
July	736,199	725,497

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THE JULY GOLD OUTPUT: GROUP RETURNS.

Central Mining/Rand Mines Group.

The following are the results of crushing operations of the Central Mining/Rand Mines companies for the month of July:—

Company.	No. of Stamps Running.	Tube Mills.	Tons crushed.	Total Fine Ozs.	Total Estimated Profit.	Estimated Working Costs per Ton.
City Deep	A154	10	55,000	25,451	£30,772	27/ 7
Cons. Main Reef	220	6	50,300	17,514	9,112	25/ 7
Crown Mines ...	660	26	179,000	57,283	48,978	21/ 4
East Rand Prop.	440	19	125,000	35,550	10,083	22/ 4
Ferreira Deep ...	160	7	35,000	12,345	8,981	23/ 9
Goldenhuis Deep	300	7	51,100	13,770	6,634	21/ 4
Knight Central ..	120	3	25,500	7,366	*1,273	25/ 2
Modder B	B104	8	57,000	29,038	62,016	21/ 3
New Modder ...	C236	15	81,000	41,196	90,624	20/ 3
Nourse Mines ...	180	5	41,400	12,745	2,245	24/10
Robinson	180	6	40,600	10,326	2,468	20/ 1
Rose Deep	300	7	56,000	15,315	15,088	17/ 8
Village Main Rf.	130	4	18,700	6,117	2,114	25/ 2
Wolluter	120	4	32,000	8,724	4,204	20/ 4
Village Deep ...	180	7	43,200	15,246	4,400	27/ 7
Tls. & Averages	3,484	134	890,800	307,986	£293,446	22/ 5
Durban Road Dp.	100	3	11,700	2,710	*25,553	63/ 1
Totals	3,584	137	902,500	310,696	£267,983	—

A Includes 4 Nissen stamps. B Includes 24 Nissen stamps.
C Includes 56 Nissen stamps.

* Loss.

Durban Roodepoort Deep, Ltd.—Loss due stoppage milling operations shaft repairs as per public announcement.

Knight Central, Ltd.—Continued loss due high costs.

Consolidated Gold Fields Group.

The following are particulars in regard to the outputs and profits for the month of July of the undermentioned companies of the Consolidated Gold Fields group:—

Company.	No. of Stamps.	Tube Mills.	Tons Crushed.	Gold declared, Fine Ozs.	Total Profit
Simmer and Jack ...	320	7	58,400	14,303	£7,931
Robinson Deep ...	180	10	55,500	17,476	8,282
Knights Deep ...	400	11	95,900	18,180	2,008
Simmer Deep ...	220	10	45,200	12,044	694
Jupiter	80	5	25,100	6,592	388
Sub Nigel	30	2	11,000	6,712	6,863
Totals	1,230	45	291,100	75,307	£26,166

Glynn's Lydenburg.

The following are the particulars of this company's output for the month of July, 1919: Tons crushed, 3,810, yielding 1,647 fine ozs.; estimated value of month's output, £7,490; estimated profit for the month, £1,684.

Witwatersrand Deep.

The following are the results of operations for the month of July, 1919: Tons milled, 30,300; running time, 27 days; fine ounces, 8,681; working revenue, £36,414, 24s. 0.43d. per ton; working costs, £38,293, 25s. 3.31d. per ton; working loss, £1,879, 1s. 2.88d. per ton. The loss is accounted for by decrease in tonnage due to an accident in the West Auxiliary Shaft, when the rope was broken and the cage descended, doing considerable damage.

Union Corporation.

Results of operations on the producing mines of this group for the month of July:—

Company	Stamps.	Tons Crushed.	Total Revenue.	Revenue per ton.
Geduld Proprietary ...	100	43,700	£66,126	30/ 3
Modder Deep Levels ...	70	43,500	95,587	43/11
Princess Estate	60	20,200	27,765	27/ 5
Totals	230	107,400	£189,418	—

Company.	Costs.		Profit.	
	Total.	Per Ton.	Total.	Per Ton.
Geduld Proprietary ...	£41,061	20/ 2	£22,065	10/ 1
Modder Deep Levels ...	38,601	17/ 9	56,986	26/ 2
Princess Estate	28,875	28/ 7	*1,170	1/ 2
Totals	£111,537	—	£77,881	—

Transvaal G.M. Estates.

The following are the particulars of this company's output for the month of July, 1919: Central Mines: Tons crushed, 12,350, yielding 4,667 fine ozs. Elandsdrift Mine: Tons crushed, 1,220, yielding 921 fine ozs. Vaalhoek Mine: Tons crushed, 1,970, yielding 679 fine ozs. Estimated value of month's output, £26,296; estimated profit for the month, £5,170.

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Albu Group.

The following is information regarding the July operations of the producing mines of this group:—

Company	Tons Crushed.	Cost.	Cost per Ton.	Total Revenue.	Profit.
Aurora West ...	13,000	£17,291	26.60	£13,652	*£3,729
Meyer & Charl.	15,000	16,945	22.59	10,446	23,501
New Goch ...	14,980	13,774	18.39	14,263	489
Roodepoort Un.	24,400	24,849	20.37	22,549	*2,300
Van Ryn Est. .	34,500	28,487	16.51	34,210	5,723
West Rand Cn.	33,260	37,909	22.79	39,355	1,446
	135,140	£139,255	20.61	£164,385	£31,159
Less Losses ...					£6,029
					£25,130

* Loss.

Aurora West.—The repairs to the mill engine were completed by the 15th July, on which date normal crushing operations were resumed.

Consolidated Mines Selection Group.

The following are the results of operations for the month of July, 1919:—

	Stamps Working.	Tons Milled.	Working Costs per Ton Milled
Brakpan Mines ...	110	49,300	26/ 5.867
Springs Mines ...	80	38,500	27/ 5.943
Totals and averages ...	190	87,800	26/11.161
	Value of Gold declared.	Yield per Ton.	Working Profit. per Ton.
Brakpan Mines ...	£92,854	37/ 8.027	£27,559 11/ 2.160
Springs Mines ...	66,372	34/ 5.751	13,444 6/11.808
Totals & averages	£159,226	36/ 3.242	£41,003 9/ 4.081

Brakpan.—Added to gold reserve 190 fine ounces; total reserve at date 7,499 fine ounces. The increase in working costs is due to the fixed charge for development having been raised from 3s. 6d. to 5s. per ton milled, with effect from 1st July.

Springs.—The increase in working costs is due to the fixed charge for development having been raised from 2s. 6d. to 5s. per ton milled, with effect from 1st July. The reduction in yield is due to the stope faces generally showing a lower value than for the preceding month, but the values obtained are in accordance with the estimated ore reserve. The areas from which the present tonnage is being drawn are lower in value than the average of the whole payable ore reserve; consequently, when conditions permit the mining of average grade ore from the reserve, an improved yield may be expected.

Barnato Group.

The results of operations of the Barnato group for July are as follow:—

Mine.	Stamps.	Tons Crushed.	Revenue from Gold
Consolidated Langlaagte ...	100	47,300	£55,422
Government Areas ...	200	122,000	212,118
Langlaagte Estate ...	200	42,000	50,281
New Primrose ...	108	19,000	18,641
New Unified ...	60	12,000	12,018
Randfontein Central ...	600	161,000	177,974
Van Ryn Deep ...	90	48,300	107,991
Witwatersrand ...	215	34,600	41,640
Totals and averages ...	5173	486,200	£676,085
June Totals ...	1650	472,200	£659,052

Mine.	Total Working Costs.	Working Costs per Ton Milled. Shillings.	Gross Profit includ- ing Sundry Revenue.
Consolidated Langlaagte ...	£13,623	18.445	£12,024
Government Areas ...	120,693	19.786	92,043
Langlaagte Estate ...	43,706	20.812	6,749
New Primrose ...	16,228	17.082	2,501
New Unified ...	10,208	17.014	1,844
Randfontein Central ...	163,773	20.345	15,170
Van Ryn Deep ...	50,812	21.040	58,048
Witwatersrand ...	37,164	21.482	6,019
Totals and averages ...	£466,207	20.000	£194,398
June Totals ...	£476,773	20.278	£184,687

Monthly Gross Profit, 1919.—January, £162,943; February, £154,054; March, £179,310; April, £180,785; May, £190,416; June, £184,687; July, £194,398.

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ENGINEERING SECTION.

THE KALAHARI PROBLEM.—II.

Is the Filling of the Lakes a Practical Proposition ?

[By AUGUST KARLSEN.]

THE essential condition in order that the scheme proposed by Professor Schwarz may be possible is that the filling and the maintenance of the three lakes of Etosha, N'Gami and Makarikari should be a practical proposition. The examples from elsewhere are not encouraging. The Caspian Sea with the catchments of the Volga, Ural and the Caucasus and the melting snow from all this enormous area can hardly be maintained as high as 85 feet below sea level. The Dead Sea is 1,292 feet below sea level, and is still decreasing. When the Zionist State is established and the fresh water of the Jordan used for irrigation, it will be necessary to introduce sea water from the Red Sea or from the Mediterranean Sea by a tunnel under Jerusalem of a length of 44 miles, able to generate at the Dead Sea, with a fall of 660 feet, 40,000 h.p. Tanganyika, draining the highlands of East Africa, overflows once in three years, and Victoria Nyanza, with an equatorial catchment of 100,000 square miles, has only 10 per cent. of the water run off from the catchment, overflowing at Ripon Falls. The evaporation on the lake would correspond to a depth of nine feet. Lake Rudolf has a catchment of 106,000 square miles of the same nature as that of the Blue Nile, and the loss on the lakes would correspond to 18.70 feet. But the most striking example is Lake Tschad, with an area of 8,000 square miles. This lake has a catchment, within an equatorial rainfall belt of over 40 inches, of 310,000 square miles. With a run-off of 15 per cent. of the rainfall, the yearly evaporation would be 22 feet. The level of the lake is still decreasing. One affluent of the Tschad, Logone, has a natural spillway from Bongon to the Benue and Niger, but this spillway, which will be the site of a great hydraulic power station, is at present of no consequence. The effective catchment of the Etosha pan, the Okavango catchment not included, is only 57,000 square miles, of which 10,000 square miles has 40 inches of rainfall, 30,000 square miles 20 to 40 inches, and 17,000 square miles 20 inches. The run-off cannot be taken to be more than 20 per cent. for the first, 10 per cent. for the second, and 5 per cent. for the third of these areas. In comparison with the South African rivers, this must even be considered as a very liberal estimate. This makes a run-off of 430,000 million cubic feet, or, taking the area of the lake at 1,530 square miles, is equivalent to a depth of water of 10 feet. This quantity may not even cover the evaporation from this shallow lake with the prevailing dry climate. Professor Schwarz says that with a depth of 20 feet the area of the lake would be doubled, provided, of course, that means may be found to bring the whole of the floods of the Cunene River into the Etosha pan. The water from the high catchment of the Okavango can probably be brought down to the Etosha pan, but this water is much too precious for the irrigation of the Kalahari, and Professor Schwarz, as a matter of fact, wishes to strengthen the Okavango from the Etosha pan. But even if the run-off of the Cunene was much greater, would it be possible to get the water in any quantity into the pan? No doubt in former time, with a higher level of the Cunene, water in flood reached the Ondongwa, but this water was spreading along a horizontal plane.

A QUESTION OF LEVELS.

Professor Schwarz says that going out from Tsumeb he found for the Etosha pan a level of 1,061 metres, or 3,490 feet. The maps give 3,444 feet. Humbe on the Cunene

but six miles away from the river, is 3,511 feet, but the river itself at Kaffoe Lake, above Humbe, is marked 3,445 feet. On the Portuguese maps of Angola, compiled by the Commissao de Cartographia, Chieundo on the Caculvar River, an affluent of Cunene, 40 miles above Humbe, is indicated to be 1,010 metres, or 3,445 feet, or a lower level than that found for Etosha pan by Professor Schwarz. No engineer will believe in Professor Schwarz's temporary dam of piles in a big river of this kind, so the dam will have to be at the small falls at Ericsens Drift, which must be about 3,380 feet. This dam, to raise the level to the floor of Etosha pan only, must bank up the river over a length of 80 miles, almost to Humbe town, and flood the country over a considerable area, thus increasing still more the evaporation. But Etosha pan is now 150 miles from the Cunene. This river has the same characteristics as all other rivers in South Africa. The greatest part of the flow is during the floods. It is not enough, then, to have a channel to lead the water, but this channel must have a considerable fall, and the fault of Professor Schwarz's whole theory of the spillways between the two rivers is that he has neglected this fall. The Nile, from Assuan to Cairo, has a fall of 1 in 13,000, which for 150 miles would be 58 feet. With only 10 feet of water in the lake we would flood Humbe with 50 feet. Therefore, without an absolutely enormous section it is absolutely impossible to run the water in to the pan in sufficient quantity to compensate for the evaporation. The small lake N'Gami can, of course, be refilled, but for this the dredging of the Okavango through the swamps is sufficient, and if these swamps are efficiently drained they will be transformed into fertile land, the enormous evaporation of the Okavango in these swamps will be prevented and the whole country will be transformed into a healthy region for a million natives. It is by this dredging that we must begin, and for this dredging the Popa Falls will supply the required power. To bring the water in from the Etosha pan, provided that the waterway described by Professor Schwarz through the Omataka really does exist, it would be necessary to take the water through a channel with a length of 250 miles, requiring a fall of 100 feet, to Dirico or the Okavango, of which the level of 3,527 feet given by Seiner may be slightly too high as compared with the Portuguese maps, giving 3,445 feet at the border instead of 3,577 feet, which should be the level at this point if the levels of Andries' Atlas of Andara, 200 miles lower down, 3,478 feet, and of Undala, 100 miles higher up, 3,609 feet, were correct. The levels given on the Portuguese maps along the river are those of a travelling party, and they vary so considerably from one point to another that it is not at all probable that the lowest levels are correct. The barometric levels of Undala and Andara, taken for a long period by the missionaries, are much more reliable. In 1901 the writer calculated in the level of Pretoria from one year's barometric observations, and the level found agreed within less than one inch with the level found later by the geodetic survey by precise levelling from Lourenco Marques. The Netherlands Railway levels were wrong by 160 feet, and the Cape Railway levels by 40 feet, while the Natal levels were almost correct. These railway levels have not even yet been corrected or have been corrected wrongly. Park Station is marked still 5,735 feet instead of 5,700 feet; Pretoria 4,471 instead of 4,433, Belfast 6,463 instead of 6,307. Hectorspruit 1,043 instead of 879. All this proves with what great caution even the railway level must be accepted, and

that in order to learn anything accurate it will be necessary to extend the geodetic survey precision levels from Potchefstroom to Mafeking and right across the Kalahari to Walvis Bay. These levels are not taken in a day, and it is an absolutely criminal waste of time not to do it when so many engineers are leaving the schools and when others must leave the country because there is no work for them. But precision levelling requires special instruments and special methods, easily learnt by any intelligent man. Anyhow, going out from Etosha pan with 10 feet of water and Professor Schwarz's level of the floor, or 3,500 feet, we should reach Dirico on the Okavango with 3,400 feet, and the river is certainly much nearer 3,500 feet. These spillways have, therefore, no practical importance.

THE FACTOR OF EVAPORATION.

The Makarikari is filled by the Tamelekane and Batletle. The Tamelekane has probably a fall of 300 feet from Popa Falls over 220 miles, but the fall of Batletle over 240 miles is problematical. In the Union-Castle Company's guide of South Africa it is said that when the Matoppa Rivers, Nata and Nalungwe, are in flood the current of the Batletle is reversed. It is, however, quite possible that before 1820 the flow of the Tamelekane was so strong that it was sometimes pushed as far as the Makarikari, or even that the water was constantly running into it. But this lake is 2,200 square miles in extent, and the evaporation at 8 feet would be 500,000 million cubic feet. The Okavango and Kwito together have a catchment of 132,000 square miles, with a rainfall of 20 inches and over, of which 6,000 square miles are in the equatorial rainfall belt of over 40 inches. The total run-off is estimated on the same basis as for the Cunene at 620,000 million cubic feet. Of this five-sixths would evaporate in the Makarikari and the rest in Lake N'Gami. The draining of the Chobe south in order to contribute to the filling of the Makarikari does not seem any more feasible. If the flow of Batletle is reversed when the Matoppa rivers are in flood, the level of Makarikari must be approximately the same as of Lake N'Gami, or 3,117 feet, while the junction of the Chobe and the Zambezi at Kazungula is 3,084 feet, and almost certain level. The distance through the old river beds is 300 miles. Even Professor Schwarz will recognise that the water of the Okavango is too precious to be wasted in the filling of a salt pan with such very problematical results. It can therefore be seen that the scheme as proposed by Professor Schwarz is not possible. There is no desire here, as mentioned in Mr. Van Zijl's letter, of experts running down any other man's proposal. The writer does not even profess to be an expert. The run-offs are based on the mathematical observations of the run-off of the South African rivers for different rainfalls and different catchments, extending over a great number of years, and Professor Schwarz makes the same error as the early irrigation engineers of South Africa. There are certainly exceptional flood years, but these floods are so sudden that it

is impossible to carry the water at once over these great distances of several hundred miles of horizontal channels. But what Professor Schwarz wants particularly is to utilise the water for irrigation and agriculture. We spread, then, the water over a much greater area and extend agriculture at the same time. The water will evaporate from the plants almost as much as from a lake. We shall then be able to open the Kalahari for the white man by abolishing a great part of it. We shall also be able to save the industrious Ovambo race and to place in South-West Africa some 200,000 white inhabitants on the healthy high plateau at Otyo, which was the sound scheme conceived by the Germans, possibly and probably on the writer's own lines. The Union has had the honour to be entrusted as mandatory of South-West Africa, and the Government of the Union must therefore consider it their duty to carry out the schemes that the former Government had more than contemplated. The English, French and Italians will develop in a sound way the Sahara and the Sudan. An enormous capital will be spent in the valleys of the White and Blue Nile south of Khartoum. The Kalahari is a much easier problem than the Sahara, and it is greatly to be deplored that so many persons in South Africa should have thrown ridicule upon Professor Schwarz's proposals and those of the writer. These proposals may be incomplete by reason of the total absence of reliable data, but they should not therefore be opposed as impossible and Utopian. In such circumstances the Union would simply forfeit its rights and neglect its duties as the mandatory of South-West Africa. The writer has in other publications strongly pointed out that South-West Africa was absolutely essential to the Union as a more direct outlet to the Atlantic from the north and as a more rapid connection with Europe by land and sea as well as for solving the Kalahari problem, which is a question of life or death to the white population of South Africa. The Union has become mandatory of the protectorate as being a partner of the British Empire. The mind of the old Dutch population may not be open to technical arguments, but some of them may be far-sighted enough to recognise the importance of the scheme. The Government's apathy on the subject is therefore inexplicable. They do not seem to understand how great a means they have in hand to bring about the so-much-needed political rest in the country. The Government's technical and scientific advisers, in combating Professor Schwarz's proposals, and thereby indirectly the sound technical solution of it, have brought forward such arguments as that the arid nature of the Karoo must have lasted for centuries. Mr. Van Zijl, who knows his Karoo, is rightly not of their opinion, and the geological evidence of South-West Africa shows well how the climate there has varied. But this argument is absurd. Even if this arid state has existed for centuries, it is not a reason why we should not try to improve it and bring along that influence that the irrigation of the Kalahari would most decidedly have.

In a following article we shall consider how this problem can be solved.

(To be continued.)

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THE WEEK IN THE SHAREMARKET.

Quiet and Steady Far East Stocks Being Picked Up Diamonds More Active,

The market has been quietly steady this week. Far East Rand stocks, without any undue excitement, are being picked up by investors, and the Modder group, the "C.M.S." subsidiaries and the New State Areas appear to enjoy steady favour. The holiday influence remains over the market, but the heartening speeches by Generals Botha and Smuts and the hope that they will recognise the urgent need of some help for the low-grade mines has engendered a more hopeful feeling. Colliery shares are firm on the improving prospects of the coal industry, conditioned by the early provision of adequate transport for the product. Diamonds, with the easing off in the market of gold shares are coming in for more attention, and Crowns and Frank Smiths promise to be active counters on receipt of more definite news from the properties. Tin shares have been easier, and the little boom in Zaaipiaats seems to have subsided. Modder Easts remain the chief feature of the gold market, and are strengthening daily with the receipt of encouraging news from the mine. Undoubtedly this property has now definitely turned the corner, and bids fair to become the next producer of the Far East Rand. The convertible debentures are becoming a popular purchase and may find imitators in the near future. They may even yet outbid the option in public favour, and they certainly seem on balance to offer greater attractions. The tone of the whole market at the time of going to press is cheerful.

	Fri., 8th.	Sat., 9th.	Mon., 11th.	Tues., 12th.	Wed., 13th.	Thurs., 14th.
African Farms	12 6	13 0	12 6*	12 9*	12 9*	12 9*
Anglo-Americans	20 0+	20 0*	—	—	23 0*	—
Apex Mines	6 11*	6 11*	7 0*	7 0*	7 0*	7 0*
Aurora Wests	6 3*	—	6 3*	—	—	—
Bantjes Cons.	3 0	3 0*	3 0*	2 10*	3 0	2 10*
Brakpan Mines	62 6*	62 9*	63 0*	63 0*	63 0*	63 6*
Breyten Collieries	—	—	12 6+	—	—	—
Brick and Potteries	4 6*	4 6*	4 6*	4 6*	4 6	4 6*
British South Africa	22 6*	22 6*	—	22 9	—	22 6*
Bushveld Tins	1 9	1 9	1 9*	1 9*	2 0+	1 11
Cassell Coals	—	—	—	30 0*	30 0*	—
Cinderella Cons.	4 10*	—	4 10*	4 9*	—	—
City & Suburbans	7 0*	7 0*	7 0*	7 0*	7 0	7 3+
City Deeps	—	55 6*	56 0	55 0*	55 6*	56 0*
Clydesdale Collieries	—	22 0*	—	—	22 0*	22 0*
Cons. Investments	27 6*	27 6*	27 6*	—	27 6*	29 0*
Cons. Langlaagtes	18 0*	18 0*	18 6*	18 0*	—	18 6*
Cons. Main Reefs	10 10½	10 6*	10 6*	10 3	10 1*	10 0*
Cons. Mines Selection	22 3*	22 6*	22 3*	22 6	22 9*	23 6*
Coronation Freeholds	1 6*	1 6*	1 9*	1 8*	1 9*	1 8*
Crown Diamonds	23 6	—	22 0	22 0	23 6	22 6*
Daggafonteins	22 0	21 6*	21 0*	20 9*	21 0*	21 6+
East Rand Coals	2 6+	2 4*	2 4*	2 4*	2 4*	2 6
East Rand Deeps	0 10*	1 0+	1 0+	—	0 10*	0 11
East Rand Minings	20 0*	20 0*	20 0*	—	20 0*	20 0*
East Rand Props.	6 3*	6 3	6 1*	6 1*	6 1	6 1*
East Rand Debentures	£68*	—	£70+	—	£70+	—
Eastern Golds	1 4*	1 5	1 3*	1 3*	1 3*	1 3*
Frank Smith Diamonds	4 11	4 10	4 10*	4 11*	4 10*	4 10
Geduld Props.	47 0*	47 6	47 3*	47 0	47 3	47 3*
Goldenhuis Deeps	7 0*	7 6*	—	—	—	8 0+
Ginsbergs	1 6*	—	—	—	—	1 9*
Glencairns	1 0*	1 0*	1 0*	1 0*	—	1 0*
Glencoe Collieries	—	5 0*	—	5 0*	—	—
Glynn's Lydenburgs	—	—	16 6+	—	15 0*	15 0*
Government Areas	90 9*	90 3*	90 9*	90 6	89 6*	90 0*
Jhb. Board of Executors	30 0*	31 3*	31 3*	31 3*	31 3*	30 0*
Jupiters	4 3*	4 4*	4 3*	4 0*	4 9+	4 3*
Klerksdorp Props.	1 4*	1 4*	1 4*	1 4*	—	—
Knight Centrals	6 9*	7 1+	7 0+	6 9	6 9+	—
Knights Deeps	6 3*	6 6*	—	7 3*	—	—
Lace Props.	16 9*	—	16 6*	16 6*	16 6*	16 0*
Leeuwpoot Tins	24 6	25 0	24 9	24 6*	24 6*	24 6*
Luibardsveils	—	3 6+	—	—	—	—
Lydenburg Farms	8 2	8 3	8 2*	8 2*	8 2*	8 1*
Meyer & Charltons	87 6*	87 6*	—	—	—	—
Middelyleis	1 9	1 9*	2 0+	1 6*	1 6*	—
Modder B's	162 6	162 0*	162 6*	162 6*	162 6*	163 0*
Modder Deeps	165 0*	165 6*	166 0*	161 0*	163 0*	165 0*
Modder Easts	24 7½	24 3	24 0	24 4*	24 3	24 0
Do. Options (3 years)	6 10	6 7	6 9	6 10	6 10	6 10

*Buyers. +Sellers. xEx London. nOdd lots.

	Fri., 8th.	Sat., 9th.	Mon., 11th.	Tues., 12th.	Wed., 13th.	Thurs., 14th.
Do. Options (4 years)	7 9	7 7	7 6	8 0	7 11	8 0
Hume Pipes	20 6*	26 6	26 6*	26 6*	27 0+	26 0*
Natal Navigation Colls.	23 0*	23 0*	—	23 0*	—	23 0*
National Banks	—	£15+	£14½	£14½	£15+	£14½+
New Boksburgs	1 0	2 0+	1 10+	—	1 9+	—
New Eland Diamonds	—	24 0*	24 0*	24 0*	24 9*	24 6*
New Era Cons.	10 9*	10 9*	10 9*	10 9*	10 9	11 0+
New Geduld Deeps	4 6*	4 6*	4 7*	4 7*	4 7*	4 7*
New Heriots	8 0+	8 0+	—	8 0+	8 0+	8 0*
New Kleinfonteins	9 11	9 10*	9 9	9 4	9 9*	9 4
New Modders	£26½	£27½	£27½	£27½+	£26½	£27½
New Primrose	2 6*	—	—	2 6*	2 6*	—
Nigels	—	5 9*	6 0*	—	—	6 6*
Nourse Mines	11 6*	11 0*	11 0*	—	11 6*	—
New State Areas	26 6*	27 6	27 6	27 3*	27 9*	28 6*
Premier Deferreds	160 0*	—	160 0*	—	160 0	—
Premier Preferreds	150 0*	152 6+	—	152 6+	152 6+	152 6+
Pretoria Cements	76 0*	—	75 0*	77 0	77 0	76 6*
Princess Estates	—	2 3*	—	2 0*	—	2 0*
Rand Collieries	3 0*	—	3 0	3 3*	3 3*	3 3*
Rand Nucleus	1 9*	1 9*	1 9*	1 9*	1 9*	1 9*
Rand Selections	70 0*	71 0*	71 0*	71 6*	71 6*	71 6*
Randfontein Deeps	—	4 6*	4 6*	4 6*	4 9	4 6*
Randfontein Estates	18 0	18 0	17 6*	17 6*	17 6*	18 0*
Roberts Victors	13 0	13 6	13 6+	13 6+	13 0+	13 3
Rooibergs	6 9*	7 0*	7 0*	6 9*	7 3+	6 6*
Ryan Nigels	—	3 9*	3 9*	3 9*	3 9*	3 9*
Simmer Deeps	1 5*	—	1 3*	1 4*	—	—
Simmer & Jacks	3 9+	—	—	3 9+	3 6+	3 6+
Shebas	1 6*	1 6*	1 6*	1 6*	1 6*	1 6
S.A. Breweries	34 0*	34 0*	—	32 6*	32 6*	32 6*
S.A. Lands	5 9	5 9*	5 9*	5 9*	5 9*	5 10
Springs Mines	46 0	45 9	45 9	46 3*	47 6	47 6
Sub Nigels	21 3*	21 3*	21 6	21 1*	21 0	21 3
Swaziland Tins	—	15 0*	—	—	17 6+	14 0*
Southern Van Ryns	9 0*	9 0	8 11*	8 11*	8 10*	8 10*
S.A. Alkalis	17 6*	18 0*	17 6*	17 6*	17 6*	17 6*
Tweefontein Collieries	24 6*	24 6*	24 0*	24 6*	24 6*	24 6*
Tudors	—	—	—	—	1 2*	—
Transvaal G.M. Estates	13 0*	—	12 6*	12 9*	12 9*	12 9
Van Ryn Deeps	69 6*	69 6*	70 6	70 6*	72 6*	72 0*
Van Dyks	2 0*	2 2*	—	—	—	—
Village Deeps	13 0*	13 0*	13 0*	13 6*	14 0*	—
Western Rand Estates	4 3*	4 6	4 3*	—	4 3*	—
Witbank Collieries	55 0*	55 0*	—	55 0*	57 6*	—
Wit. Deeps	13 6*	13 6*	13 6*	13 6*	13 9*	13 9*
Wolluters	2 10*	2 11	2 10*	2 10*	2 10*	2 11
Zaaipiaats	8 0	8 3	8 0	8 1	8 1	7 9
Union 5 per cents.	£103½	£104	£104+	£104*	£104½	£104½
West Springs	21 3*	22 0	21 9*	21 9*	22 6	22 11
Do. Options	5 0+	4 3	4 6	4 7½	4 10½	4 9

*Buyers. +Sellers. xOdd lots. nEx London.

Zaaipiaats Tin.

The results for the month of July, 1919, are as follow: Days run, 27; concentrates won, 12 tons; estimated loss for the month (excluding Government taxes and Directors' fees), £2,140 16s. 1d.; capital expenditure, £587 9s. 5d.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Coal Shortage Through Railway Trucks—Railway Engines and Trucks—Trend of Business—Cloud Lifted, as Yorkshire Strike is Settled—Generals Botha and Smuts are Again in the Saddle—Electrical Goods.

The special feature of the week is the scarcity of household coal; so much so that in certain parts of the town coal is unobtainable; the ordinary price is 2s. a bag retail, but the lowest price for two bags purchased in Ferreira's Township was 3s. 6d. each, and 9d. per paraffin tin full. From these remarks it will be seen that a serious shortage, amongst householders at least, has occurred. A visit was made to the Coal-owners' Association, where the chairman was interviewed, when it transpired that the price of coal at the pit's mouth had not been advanced and there was no shortage there, the difficulty being the fault of the Railway Department on account of a serious shortage of trucks and engines. Some of the coal mines were paying their men to stand by awaiting the receipt of trucks at the various coal mines. He also explained that everything was being done to increase the coal supply in Johannesburg, and he hoped that the serious shortage now experienced would soon be remedied. Whilst the Peace holidays were partly responsible for the present position, yet the real reason is, as before remarked, the shortage of railway trucks. And naturally the cold snap experienced during the past week increased the consumption considerably, and the extra demand unfortunately came upon a bare market. It is amusing to note that the chairman himself has been getting into trouble with his family because there is not a scrap of coal left for their household purposes, and he has had to borrow from his neighbours.

SHORTAGE OF RAILWAY ENGINES AND TRUCKS.

It is not surprising that South Africa is short of railway trucks, which is responsible for the household coal famine. And, according to a produce market report, it says that the shortage of beans has dwindled away the same as the supplies of every other kind of produce owing, of course, to the scarcity of trucks on the railway. How these things are being brought home to us, both in inconvenience and high values, causes the question of railway engines and railway trucks unpleasantly to force itself to the front. However, it is not surprising after a five-years' war and the peace upheaval that things have reached their present state, as for all practical purposes we do not make either power or trucks in this country. Hence our absolute dependence upon overseas workshops. To-day a railway train is a wonderful piece of machinery, and therefore requires experience and expert workmen to turn it out in its entirety. And, by the way, it seems from a broad standpoint that such a one-man strike at the Pretoria railway workshops ought, to say the least, be avoided. Be that as it may, the fact remains that we are not making railway trucks in South Africa. No doubt the wooden bodies are not difficult with our excellent supply of hard woods, but it is those marvellous bogie coal trucks, made throughout of iron. Their strength is marvellous, and the intricate apparatus for unloading the coal in bulk, as well as the automatic brake apparatus, is something to be admired. Remember, it took Australia almost a century to make similar things, therefore there is no occasion to twit ourselves upon our want of progressiveness. The under carriage of railway trucks, engines, as well as motor-cars, is the crux of the whole matter. It is not sufficient to import all the iron-work, such as is done with grindery in making boots, the furniture and harness for the fittings

for furniture, but the Government might take the question in hand of making trucks, say, at Salt River. The Western Province is the home of road wagon building in the Worcester and Paarl districts, where men can easily be found to make the tops of trucks at a reasonable rate. Some of the road waggons are pictures in themselves after a hundred years' experience. Here again all the iron work and fittings have to be imported. Perhaps with the full advent of the pigiron industry and the likelihood of Japan giving a hand therein, something might eventually be achieved. In the meantime, whilst we are at the moment furnishing for coal in the kitchens of Johannesburg, it is up to the Government to see what can be done to start a real factory for making railway trucks through and through in the best and simplest manner. Up to the Government, because they have the railways in hand, therefore private enterprise cannot well come in to exploit such a new industry which much eventually be established in South Africa.

THE TREND OF BUSINESS.

It is surprising what a cloud was lifted off the commercial horizon when it was announced by the cables that the strike in the Yorkshire coal fields had been settled. That, coupled with the fact that General Botha and General Smuts received a rousing reception in Johannesburg, also assisted the renewal of confidence, as it means a good solid Government instead of a make-shift one. The Premier and his lieutenant have resumed their serious duties, therefore the mining material people will soon hope to hear something favourable as a result of the Low-Grade Mines Commission. The word "favourable" has been used advisedly, as business for the mines has recently improved on the Commercial Exchange, which is an indication that they are not waiting for stores from other mines. Another substantial reason for more orders from the mines is that over nine months have elapsed since the Armistice, when practically all big buying was stopped, coupled with orders to use up the reserve stores. The merchants are aware that movements are being made to further exploit the Far Eastern Rand. A member of Parliament is already on the way to London to fix up a large proposition in the Heidelberg district, and one is beginning to hear of this new venture not only in gold and diamonds, but in other things. Some of it is no doubt bordering on hopes, but there is sufficient actually doing to indicate that business is decidedly moving towards new propositions, which is exactly what we are on the tip-toe of expectation for.

OILS AND COLOURS.

Business continues quite good, as a lot of painting and furnishing is being done after a lapse of five years. Canadian white lead is 75s. per 100 lbs., and English 90s. The latter is retailed over the counter at 1s. per lb., and genuine red lead is the same price. Linseed oils are advancing in price. The Indian variety is 85s. to 90s. per case of two-fours; English is scarce, and is quoted at 17s. per imperial gallon. The price in London is 10s. 11d. per gallon, including containers, and costing for freight and charges 100s. per case landed in Johannesburg. Turpentine, 75s. two-fours and 85s. ten-ones. Turpentine substitute, 45s. case of ten-ones. Castor oil, medicinal, 100s.; ordinary mine, 85s.; and

crude mineral, 15s. per case. American best salad oil, 135s. to 140s. case; South American, 120s. African nut oil, 80s. Nuts are ruling £12½ to £45 per ton. Olive oil, 27s. 6d. to 30s. per gallon. Grease, imported, £45; local, best, £32½ to £27½ per ton. Motor spirit, 38s. 6d. per case, and even more, on account of scarcity, which will be relieved through importations any day now. Paraffin is the same price, with fair stocks on hand. Varnishes: ordinary carriage, 27s. 6d. gallon; oak, 22s. 6d. gallon; patent knotting, 22s. 6d. French polishes, 22s. 6d. gallon. Brunswick black, 25s. gallons. Special ceiling varnish, 17s. 6d. gallon; Copal, 17s. 6d. gallon. Trade Market report: White lead has advanced to £58½ per ton in England. Linseed oil: The English market is gradually advancing. Turpentine: Market rising rapidly; the price has advanced, according to recent cables, to 63s. in New York.

ELECTRICAL GOODS.

After the spurt caused by the elaborate peace celebrations, business in the electrical section has been very dull indeed. Tubing, which has become scarcer and scarcer, has not yet come to hand, and there is practically none in town. Stocks of this are at the coast, and have, as a matter of fact, been there for some considerable time, but all efforts to bridge the intervening space between the coast and Johannesburg have up to the present, owing to some esoteric reason, failed. In the meantime this is causing not only anxiety on the part of importers, but great inconvenience to would-be users. Lamps are 2s. each, or 23s. a dozen retail. These are chiefly Holland and American; British are about 35s. a dozen, but there are very few in the market.

IRON AND STEEL.

Business is still good for all kinds of bar iron and mild steel, both South African and imported. According to one firm of Scotch importers, more than sufficient is dribbling through from time to time, now that prices have fallen in Johannesburg in consequence of the importations from Canada and America. The wire nail market is also peculiar, as a big parcel of wire nails of the larger sizes was sold at 30s. per 100lbs., as compared with about 35s. the recognised standard price. Steel plates are about £45 per ton. Brass rods, 3s. lb. Tool steel is advancing, being about 1s. 3d. to 1s. 9d. lb. on account of the labour position in America. Quotations are anything but solid: as one merchant remarked to another, if he sold his stock at 10 per cent. advance, he would not be able to recover his landed costs. This has reference to those bought in pre-armistice days.

TIMBER AND BUILDING MATERIALS.

The latest cable news is that the tendency in the Baltic area is for prices to ascend. One reason is that in another month and a half the Baltic closes on account of the ice; therefore London and Europe are placing big orders in Sweden and Norway for delivery before November. There are several shipments on the way for South African ports, and forward contracts have been made for others to follow. The more favourable news about the Yorkshire coal strike will assist our timber dealings, because if England can send coals to Norway and Sweden it will assist the financial exchange between those countries, and so keep our sovereign in countenance. Prices in Johannesburg are: for deals, 1s. 7d. to 1s. 8d.; floorings, 8½d. to 9d.; and ceilings, 6d. to 6½d. Galvanised iron is acutely scarce in Johannesburg, but relief is in prospect, as it is reported that British roofing iron is on the way from the coast. The prices remain much the same, as it was known about the shipments on the way. Up to 10ft. 24-gauge, 1s. 3d. to 1s. 4d.; and over 10ft., ½d. per foot extra.

One is always willing even anxious to give particulars of any new industry as regards South Africa. The fact is that Rhodesia and the Union people have been pushing our own woods for furniture and wagon-making, and the war has undoubtedly made all concerned in that line to see the best that can be done for house building. It must be admitted that not much progress has been made, as the Baltic deal is thoroughly prepared for house erection, and,

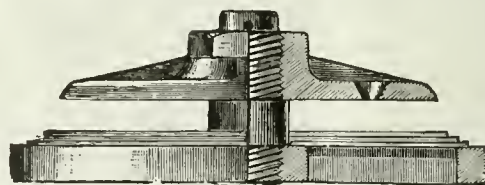
what is more, that it is a soft wood easily worked. However, we need not be discountenanced on this score, as we have a most valuable asset in South African woods. And it must be borne in mind that the American and, unfortunately perhaps, in a lesser degree the British, machinery makers are already hustling around for orders for all kinds of machinery, and wood-sawing and wood-turning are amongst the most notable, and, thanks to the owners of our sawmills, they have not done badly in the past, and most surely they will do better in the future, and secure the latest and best wood-cutting machines. The new industry is that of Mark Wilson, Limited, and is situated at Koedoeshoek Sawmill, near the Elandschoek Station, in the Low Veld, on the Delagoa Bay line. The firm in question had the pluck to make a narrow-gauge railway for 25 miles through a very difficult country, but it has been accomplished, which enables the sawmills to be well supplied with the native timber. The prices for same in Johannesburg are: for hardwood deals, 9 x 3, 1s. per foot. Government standard for orange boxes, £10 per 100. Wood for brake blocks and wagon woods, 8s. 6d. a cube. Disselbooms, selected, 7s. 6d., and in quantities 6s. 6d. each. The office in Permanent Buildings has a good display of samples, where fuller particulars can be obtained.

EXPLOSIVES.

A drop in the price of glycerine is foreshadowed, which, although not in operation, will, it is expected, shortly come into force. Fortunately, the high-priced stocks held by the local factories have been gradually reduced during the past six months, and the reduction in prospect, though at present not great, will in any case be some reduction and tend towards lower working costs at the mines. Any reduction in the present high cost of glycerine—and the tendency in the future will be towards such reduction—will make a considerable difference in the price of explosives.

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Company Meetings.

VRYHEID (NATAL) RAILWAY COAL AND IRON CO., LTD.

The eleventh annual general meeting of the Vryheid (Natal) Railway Coal and Iron Company, Ltd., was held on July 10 at Winchester House, Old Broad Street, London, E.C., Major G. H. Peake (chairman of the company) presiding.

The Chairman, in moving the adoption of the report and accounts, said: Our relations with the South African Railway Administration are of the very greatest importance to the future of the company, and our prosperity depends upon whether or not we can find a solution of the difficult problems which have arisen. The position is that under our Act of Parliament and subsequent modifications we have to supply a certain quantity of coal at 5s. per ton to the Government for locomotive purposes, and the Administration has to supply us with adequate truckage for our requirements. Owing to the increase in mining cost, which appears

likely to be permanent, we can now only supply this coal at a considerable loss. You will remember that our company was the pioneer in the Hlobane district, and built the railway from Vryheid at a cost of about £80,000. For February and March of this year the profits are estimated at £900 per month, or at the rate of £10,800 a year, and are rapidly increasing. Our anticipations have, therefore, proved correct. In 1931 the Government have the right of expropriating the railway at cost, when also our liability to supply them with coal comes to an end. The present position prevents our company from any further developments. Sir William Hoy, the Administrator for the Railways in South Africa, came to England in connection with the negotiations for peace, and I made it my business to meet him to discuss matters generally. Our proposal to the Government was that they should expropriate the railway at once and make a fresh arrangement as regards the purchase of coal at a price depend-

ing upon the cost of production, and giving our company a reasonable profit. Negotiations on this proposal are proceeding in South Africa, and when an agreement is arrived at I shall take steps to inform the shareholders. I should also like to remind you that the capacity of our mines, given an adequate supply of trucks and sufficient labour, is between 50,000 and 60,000 tons a month, whereas our output last year was under 30,000 tons a month. The Chairman then proceeded to deal with the accounts in detail, and expressed the regret of the board that the company was not in a position to pay a dividend. They had earned a profit on the year's working of £13,800, but the balance brought forward of £28,500 was not available in cash. On January 31 last they had a balance in the bank of £14,700, but this could not be divided without grave risk to the future of the company. Mr. G. H. Bonas seconded the motion, and the proceedings then terminated.

S.-W. TRANSVAAL DIAMOND RETURNS FOR JUNE.

The returns from the diggings of the South-Western Transvaal for June again show a total which tops the £60,000 figure, and the figures for the first half of 1919 are as under:—

	Carats.	Value.
January...	3,385½	£31,685 15 0
February...	4,631½	41,968 8 6
March...	5,431½	54,166 0 0
April...	5,530½	59,261 7 6
May...	5,964½	68,473 10 9
June...	5,116½	63,863 10 0

THE PRODUCING AREAS.

These numbered 42, and are as follows (Bloemhof district areas being without distinguishing mark; * denoting Wolmarausstad district and † Potchefstroom district):—

	Carats.	Value.
Kameelkuil...	1,293	£17,343 15 0
Blesbokfontein...	894	10,608 17 6
*Rietkuil: Uys...	814	9,284 17 6
*Kareepan: Lavine...	286½	3,714 5 0
*Rietkuil: Odendaal...	229½	2,753 0 0
Bloemheuvel...	138	2,065 0 0
London...	151½	1,963 5 0
*Kareepan: Uitspan...	179½	1,814 12 6
Christiana...	146½	1,747 15 0
*Leeuwfontein...	127½	1,459 5 0
Bloemhof...	108½	1,339 0 0
Mooifontein...	99½	1,234 17 6
Schweizer-Reneke...	79½	1,130 10 0
*Syfergat...	62½	1,078 5 0
Goudplaats...	52½	868 0 0
*Holloway's Rust...	50	653 15 0
Dievedraai...	55½	651 0 0
Klein Italie...	28½	412 0 0
Plessisdam...	42½	395 0 0
†Eastleigh...	25½	389 10 0
Bessieslangte...	18½	362 0 0
Kareefontein...	24½	353 0 0
Grootdoornus...	24½	323 10 6
Nanwpoort...	22½	272 10 0
Veehtvallei...	21½	265 5 0
*Klipkuil...	26	224 10 0
Mimosa...	11½	211 10 0
Cawood's Hope...	15½	143 0 0
Olivefontein...	5	122 10 0
Jala Jala...	5	105 0 0
Zevenfontein...	12	101 10 0
*Doornbult...	7½	96 0 0
Panfontein...	11	80 0 0
Kafferspan...	8	71 10 0
Italie...	5½	66 0 0
Rietput...	11½	59 0 0
*Katdoornkraal...	12½	40 10 0
Kromellenboog...	4½	26 5 0
Uitspanning...	2	15 0 0
Middelbosch...	3	5 10 0
Zendelingsfontein...	3	5 0 0
Homansvlei...	3	5 0 0

Average price per carat. £12 9s. 7d.

Rose Deep.

The report of the directors for the quarter ending 30th June, 1919, shows: Total footage, 1,528 ft.; total footage sampled on reef, 1,207 ft. The payable reef disclosures were as follows: Main Reef, 397 ft., width 42 in., assay value 11·2 dwts.; Main Reef Leader, 224 ft., width 30 in., assay value 8·1 dwts.; South Reef, 171 ft., width 42 in., assay value 8·4 dwts. The tonnage crushed was 155,100 tons, and total yield 44,198 fine ozs., showing a total yield per ton of 5·699 dwts. The profit earned showed a material improvement on account of an increase in the value of the ore mined. A dividend (No. 36) of 7½ per cent. was declared on 17th June, 1919, for the period ending 30th June, 1919, and will be payable from the head and London offices to all shareholders registered on the company's books at 30th June, 1919. The total working expenditure was £145,914, and the working profit carried down £39,889, or 5s. 2d. per ton milled.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the S.A. Mining Journal. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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Notes and News.

Belgian Congo: Regulations Governing Mining Concessions.

A copy of the Royal Decree of 16th April, relating to the prospecting for minerals and the working of mining concessions in the Katanga (Belgium Congo) has been received by the Belgian Section of the Department of Overseas Trade, India House, Kingsway, London, where it may be consulted by British firms interested. The Decree contains the regulations for prospecting for minerals and for pegging and working mining claims. It substitutes a graduated levy on profits for the uniform levy hitherto in force.

* * * *

Lydenburg (Transvaal) Cold Exploration.

The report for 1918 shows that total area of the company's property is about 66,300 acres. Revenue account shows a credit balance of £829. The farming policy adopted having proved itself best adapted to the particular requirements of this company has been continued on much the same lines as before. Live stock continues to increase in number. Turnover is maintained and profit has been satisfactory. The outbreak of influenza was a rather serious one in the Pilgrim's Rest district, and unfortunately resulted in the death of over 350 natives on the company's farms. Inquiries for purchase of some of the farms show that a demand for agricultural land is arising in the district.

* * * *

Diamonds on Cold Coast.

An interesting discovery of diamonds was made on the Gold Coast in February last. They occur in shallow quartz gravels near the village of Abomoso, 65 miles north-west of Accra. The stones found are small, averaging approximately thirty to the standard carat, and are mostly of good quality, clear and colourless. Many are perfect crystals, and in value they vary from 10s. to 12s. per carat for the smaller grade, 17s. 6d. per carat for the medium grade, and from 30s. to 32s. 6d. per carat for the larger grade. This is for mixed samples, including all qualities of stones. Some of the larger stones are worth from 70s. to 80s. per carat. Upwards of 600 diamonds have been found merely by panning, but sufficient work has not yet been done to prove the economic value of the discovery.

* * * *

Free Market for Gold.

According to London newspapers, it is improbable that the restoration of the free market for gold will have an early effect on foreign exchanges. The "Times" points out that during the period of control most of the South African gold was sent abroad, chiefly to America on Government account, giving the Government a profit on exchange which will now go to the producers. The paper says:—"Probably the new gold will move more freely to the United States and other countries having power to draw it from us than during the war period, but the effect on American exchange will depend on several other factors. For instance, exchange should acquire much greater stability when the scheme for granting credits to European countries for the purchase of American commodities has been thrashed out and put into operation." The "Daily Telegraph" says that while the mines have been penalised during the last nine or ten months, the course pursued by the Government was to the benefit of the whole country, since it helped in preventing too seriously adverse movements in exchanges. The paper does not expect that unrestricted shipments of gold will bring exchanges back to normal. If the whole of the South African output were exported it would go only a little way towards correcting the adverse balance of trade. The permission to sell gold in the best market is most important for the mines, which will be able to realise 10 to 15 per cent. more, and will be enabled to meet the higher expenses. The low-grade mines that were on the verge of being closed down will be able to continue work, and the shrinkage threatened in the gold output may be averted. The profits of those mines whose revenue still exceeds the expenditure will be materially increased. Tardy justice has been done to the gold producers, and the outlook for shareholders has consequently improved.

Rhodesia Broken Hill Annual Report.

The report of the Rhodesia Broken Hill Development Company for 1918 states that Treasury consent has been obtained to issue the 758,917 reserve shares. The options have been exercised, and the whole of the capital—namely, £350,000 in 1,400,000 shares of 5s. each—has now been issued. The lease of the Rhodesian Lead and Zinc Syndicate has been cancelled, and the property, with its equipment, of two blast furnaces and plant capable of producing 1,200 tons of lead per month, has reverted to the company. During the year from 1st January to 31st December, 1918, the syndicate produced 9,161 tons of lead. The lead production since the 1st of January, 1919, is 6,297 tons, making total lead production to date of 21,001 tons.

* * * *

Possible Effect of South African Mint.

Further substantial shipments or engagements of gold to a total of 21,620,000 dollars have been announced in New York, state Messrs. Samuel Montagu and Co. in their weekly report. About half of this amount is for Spain, and about a quarter each for Japan and South America. A small amount of £35,000 dollars has been engaged for shipment to England. It now seems fairly assured that a Government Mint will be set up in the Transvaal, probably at Johannesburg. In this event, the Dominion of South Africa will follow the example of Australia, Canada and India in creating a local Mint. The British sovereign has enjoyed universal prosperity; it has commanded, and does still command, a premium in certain places over gold, coined or otherwise. If the whole of the output from the Transvaal be minted (instead of only a part, as heretofore), the British sovereign is likely to be still more conspicuous throughout the world, although a shortage of gold bullion, consequent upon such an increased mintage, would probably impel a considerable quantity of the new coin into the melting-pot, after a brief and barren lease of life.

* * * *

Operations at Rhodesia Broken Hill.

Mr. S. J. Speak, M.I.M.E., has recently returned from a visit to the property of the Rhodesia Broken Hill Development Company, and a report signed by his firm, Hooper Speak and Co., the company's consulting engineers, is issued with that of the directors. The first water-jacketed furnace was started at the end of June, 1917, and the second during the following October. They have run continuously with the exception of the stoppage towards the end of 1918 or nearly three months caused by the influenza epidemic. Last year 9,161 tons of lead were produced, and during the first half of the current year 6,297 tons have been produced, making the total lead production to date 21,001 tons. How much ore was treated for this yield of metal is not stated, nor are details given of extraction or working costs. All that is said about extraction is that this "is fully up to expectations, and promises soon to surpass them." Experimental work has been carried out in the direction of producing a zinc fume rich in lead and zinc oxides from the low-grade oxidised ores. It remains, however, to establish a method of accomplishing this cheaply. The sulphide ores, it is stated, will be amenable to methods of treatment in regular use elsewhere, and they do not offer any serious metallurgical difficulty. The Francois cementation process has been adopted at this property; the ground surrounding the new main shaft has been impregnated with cement to a depth of 50 feet, and shaft sinking is being resumed.

* * * *

The Antelope Mine.

The report of the Antelope Gold Mine (Rhodesia), Ltd., for 1918 states that the capital remains unchanged. The claim holding has been reduced to 160 claims, the Walton block of ten claims having been abandoned. Investments sold during the year realised a loss of £562, leaving the company with investments representing at cost £11,749, which are valued at £2,125. The company's holding in Treasury bills was £16,000 at date of the accounts. There was a loss on the year's operations amounting to £48, to which is added the loss on realisation of investments referred to above, a reserve for income tax provided, and bad debt

written off, leaving a debit of £5,209, which, added to the amount brought forward from last year, gives a total debit of £9,220. Shortage of skilled and native labour again held up important development work, and the main reef reserves at 51,000 tons, averaging 9.1 dwts., shows a decrease of 25,000 tons and 0.8 dwt. in value compared with the previous year. In view of the increase in costs, the value of the ore shoot at the 14th level has so far proved disappointing, and the prospects cannot be considered encouraging. Several factors have combined to affect seriously the results of operations. The intrusion of a granite dyke in the best stope has greatly reduced the grade of the ore, while the company is faced with greater pumping and haulage charges, and the labour position is still affected by the influenza epidemic. In consequence of the unsatisfactory results, the question arose whether the mine should be closed down or let on tribute. For various reasons the property is not one likely to appeal to tributors. It therefore remained to determine whether it would be worth the company's while to continue operations, working as far as possible on a tributing basis. It was calculated that economies could be effected, and it was decided after full consideration to adopt this system as being preferable to closing down the mine, and it was put into operation as from 1st January last, with the result that for the first four months of 1919 there is an excess of revenue over expenditure on the mine of £1,062 in place of a working loss.

* * * *

Moodie's Gold.

That the prospects of Moodie's Gold Mining and Exploration Co., Ltd., have improved is shown by the speech delivered by Mr. Edward W. Cox-Moore at the annual meeting held in London the other day. Owing to the war the company has been unable to develop its assets to best advantage, but of late the directors have been able to adopt a more vigorous policy. It has been decided, after careful investigation by experts, to undertake an experimental agricultural scheme. The possibilities for cotton growing alone are considerable, and this has been confirmed by the Agricultural Department of the Union Government. Roughly speaking, there are 5,000 acres available and this could be largely increased by suitable arrangements as to irrigation. Mining work has been rather at a standstill as prospectors have been few and far between. The power station for electric current has been kept in good order and has been able to meet the requirements of customers.

* * * *

Progress at the Falcon.

At the Falcon Mine, during the six months to March 31 last, no further sinking took place in the main shaft, the depth of which remains at 1,109 ft. from surface. Owing to the shortage of underground labour caused by the influenza epidemic in the first three months of the period now dealt with but little development work has been carried out, and this has been mainly directed to the opening up of fresh communications in the upper levels owing to the subsidence of ground in August, 1918, between the fifth level and the surface. In consequence no further information is available regarding the continuance of the ore body in depth, and no addition has been made to the ore reserves during the period. The entire mine plant was shut down for several weeks during October and November, 1918, owing to the influenza epidemic, and the results for the December quarter were affected by this stoppage, and by shortage of coal supplies, as will be seen from the fact that the output for that quarter, valuing the copper contents at £65 per ton, amounted to £41,675, and the expenses to £66,923, whilst for March quarter the value of the output on the same basis was £92,625, against expenses amounting to £89,325. Working costs in the December quarter from this cause averaged 66s. 1d. per ton, but during the March quarter, 1919, they were reduced to 43s. 6d. per ton, the average for the month of March being 40s. 1½d. per ton, at which figure it is hoped to maintain them. During March four days were lost owing to repairs to the runners and sets of the main shaft, and further work on this account remains to be done when opportunity offers.

TOPICS OF THE WEEK.

THE SALE OF RAND GOLD.

CERTAINLY one of the most interesting suggestions put before the Low Grade Mines Commission was that submitted this week by Mr. D. C. Greig, lately President of the Johannesburg Stock Exchange. We cannot agree with Mr. Greig's opening statement that the shareholders in Rand mining companies are not represented on the Commission. The representatives of the Chamber of Mines are, surely, the trustees of the shareholders, and it is splitting hairs to say that in looking after the interests of the industry as a whole, those representatives are not equally acting in the interests of the shareholders. Put briefly, Mr. Greig's proposal is to obtain more for Rand gold by a system of gold warrants issued by the Chamber of Mines with the backing of the Union and Imperial Governments against the refined gold of the Rand. Mr. Greig declares: "The problem which shareholders would like the Commission to solve is: how to get the highest net price for our gold, whether sold as exchange or as a commodity, and I have to submit the following scheme, which I trust may assist you in arriving at a satisfactory solution. I understand the selling agreement with the Bank of England is for twelve months. By that time the Mint, it is hoped, will be in operation, and certain details of the proposals are based on that understanding. I assume that the Chamber of Mines in the interests of shareholders may pool the output and that the output be placed in the hands of the refinery authorities of the Mint. If the bullion market is in Johannesburg these authorities would issue warrants against the deposit, of such weight and fineness as may be cabled by the authorities to their agents there to sell warrants equal to the deposit. To make the warrants of unimpeachable credit they should be guaranteed by the Union Government as guardian of the deposit, and by the Imperial Government on account of the general benefit derived by commerce from the elimination of the risk and charges involved by the passage to and fro of gold. The warrants to be sold to the highest bidders who could deal with them either for exchange or trade purposes, as they would be convertible into their equivalent in gold on presentation at the deposit. The purchaser of the warrant would endorse it in favour of the party to whom he handed it on, and in practice no one would accept a warrant unless its history were revealed by the endorsements, as well as from personal knowledge of the tenderer. With the deposit in Johannesburg there would be ample time if a warrant were stolen or mislaid to stop its conversion. The advantages of the warrant are shortly stated as follows: (1) Its great convenience as a medium of exchange, and its high speculative value on account of its convertibility; (2) the great benefit to producers and customers through the elimination in exchange of the two factors, credit and the charges on gold shipments; (3) making the bank rate a more effective instrument in controlling the movement of capital in the money market." Whilst not actually condemning Mr. Greig's proposal, the President of the Chamber of Mines, Sir Evelyn Wallers, seems to regard it as unnecessarily elaborate. In the course of his examination of Mr. Greig he is reported as saying: "The new arrangement is a free market in gold, not only in the Exchange market, but in the bullion market in the trade. So that our gold will be sent Home as from midnight on July 24 to the free market in London. We shall sell it through our agents there, either in the Exchange market, or, I presume, in what you refer to as the commodity market, or to the trade for ordinary industrial purposes." This seems to be borne out by the latest views of the London financial papers. The general tenor of their opinions is, however, that it is premature to make calculations of the probable benefit to the Transvaal producers of the new move based solely upon the fact that a trial shipment to the States of 50,000 ounces of the metal has been realised at a premium of fully 10 per cent. over the Bank of England's fixed buying price. Only actual experience can prove what average premium can be secured when 700,000 ounces of gold monthly come on the open market. In London it is hoped that the Transvaal Chamber of Mines has already made, or will make, an arrangement that should only a proportion of the monthly

output be sold at a premium the profit should, as Mr. Greig says, be pooled and divided among all the producers. As it is, the richer mines will obviously reap a disproportionate benefit as compared with the poorer ones from any higher price for gold, and it would be clearly unfair to run the risk that the accidents of sale abroad might further assist them to the detriment of their less fortunate fellows. At any rate, we should soon have definite news from London to guide us regarding the working of the new arrangement, and that may also determine the value of Mr. Greig's suggestion.

Chartered Company's Report.

The latest report of the Chartered Company states that during the year ended 31st December, 1918, dividends amounting to £615,640 were declared by Rhodesian mining companies, as compared with £691,260 during the previous year, a decrease of £75,620. In addition, dividends amounting to £353,899 were paid by Rhodesian development and miscellaneous companies, as compared with £154,232 in 1917, an increase of £199,667. The total cash dividends declared by Rhodesian mining companies to the 31st December, 1918, have amounted to £5,902,987, exclusive of dividends declared by Rhodesian development and miscellaneous companies in cash and scrip (which amounted to over £2,900,000), and exclusive also of dividends paid by local Rhodesian mining companies and syndicates. Prospecting was mainly confined during the year to the district lying about 60 miles east of Lusaka, but no discoveries of exceptional value were made, though development work on bismuth, scheelite and copper was carried out. A considerable increase in the production of copper and lead is anticipated when the new plants at the Bwana M'Kubwa and Broken Hill mines are in full working order. The comparative figures of railway receipts for the five years ended 30th September, 1918, are as follows:—Year ended 30th September, 1914: Gross receipts of the Rhodesia, Mashonaland and Beira Railways, £1,672,071; net receipts of the Rhodesia and Mashonaland Railways, £862,745. Year ended 30th September, 1915: Gross receipts of the Rhodesia, Mashonaland and Beira Railways, £1,313,259; net receipts of the Rhodesia and Mashonaland Railways, £639,737. Year ended 30th September, 1916: Gross receipts of the Rhodesia, Mashonaland and Beira Railways, £1,569,260; net receipts of the Rhodesia and Mashonaland Railways, £861,833. Year ended 30th September, 1917: Gross receipts of the Rhodesia, Mashonaland and Beira Railways, £1,687,667; net receipts of the Rhodesia and Mashonaland Railways, £911,351. Year ended 30th September, 1918 (approximately): Gross receipts of the Rhodesia, Mashonaland and Beira Railways, £1,808,314; net receipts of the Rhodesia and Mashonaland Railways, £978,700. The improvement in the gross receipts for the year ended 30th September, 1918, was due chiefly to increases in the following traffics: (1) Export of lead; (2) Transport of fuel to the Congo; (3) Volume of merchandise of South African manufacture and production imported into Rhodesia and the Congo. The influenza epidemic, which prevailed throughout Rhodesia and South Africa during the months of October and November last, seriously affected the earnings of the whole Rhodesian railway system. The latest figures show a return to more normal conditions. The administrative accounts for Southern Rhodesia show a deficit of £25,198 for the year ended 31st March, 1918, as compared with a surplus of £958 for the previous year. The deficit on administrative account for Northern Rhodesia was £49,024 for the year, as compared with £10,339 for the previous year. The commercial accounts show an excess of revenue over expenditure of £167,345, as compared with £174,731 for the previous year. The gross commercial revenue for the year was £478,741, an increase of £11,246. The above includes £61,408, being the revenue from land rents which have to be deducted from the company's claim against the Crown under the Report of the Judicial Committee of the Privy Council. An amount of £18,157 for the legal expenses incurred in connection with the company's case in the Special Reference to the Judicial Committee of the Privy Council regarding the ownership of unalienated land in Southern Rhodesia was written off during the year.

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THE IMPROVING PROSPECTS OF THE MODDER EAST.

"An Attractive Mining Risk"—Patience of Shareholders During Early Stages of Development Rewarded—Some Notes on Mining Speculations.

THE feature of the week has been the appreciation in the Sharemarket price of Modder Easts, the options and the convertible debentures. The reason is to be found in the steadily improving development position at the property and in the relaxation in the London Stock Exchange conditions, which will doubtless make for greatly increased interest in the company on that side. When Sir Evelyn Wallers a few years ago described the property as an attractive mining risk he, of course, reflected the views of his technical advisers, and it must be very gratifying to all concerned that the various dyke and water troubles encountered in the early stages of development have now been successfully surmounted. It is a little difficult to reply to all the queries that reach us regarding the value of the shares, for the simple reason that it is conditioned by the progressive factor of development. In the circumstances, perhaps, it may be safer to quote some of the best available opinion on the general question of mining risks. Thus Mr. T. A. Rickard, in a recent address delivered before the International Mining Convention, declared that "The investment idea, of minimising risks and limiting possibilities, would soon cause mining to die for want of breath. Before a profitable outcome is assured every mining enterprise must pass through several stages of speculativeness as surely as a child must take the chance of bumps and bruises, of measles and mumps. The biggest fortunes are made during the early stages of development; on the whole, more money is made by selling than by buying mines, simply because the final or so-called investment stage of a first-class mine is likely to represent an over-valuation, caused by an erroneous supposition that the essential hazard is precluded."

Mr. Rickard goes on to say: "Every business involves one or more indeterminate factors, and therefore contains an element of risk. Without risk there is no gain; but a large gain usually involves a large risk. There are people in mining, of course, that take big odds, that like a reckless bet; they are real gamblers, even if they are unaware of it; but the risks taken in legitimate mining are under some measure of control—they are met by scientific knowledge and by trained intelligence. A blend of pluck and judgment is required. You will recall a line in Kipling's poem, 'The Merry Gloster': 'And I took the chances they wouldn't, and now they're calling it luck.' That is why I insist that mining, properly conducted, is not a gamble."

On the other hand, no man of experience in these matters would expect to escape all the risk. The idea of eliminating risk from mining is both contrary to the spirit of the business and false to the history of it. To understand mining—to appreciate the principles guiding legitimate and successful speculation in mines, you must revert to the old Cornish word for shareholders; they were called 'adventurers,' that is, men willing to make a venture.

"Indeed the idea of avoiding risk in mining is a pathetic fallacy; a puerile endeavour to escape the inevitable. The attempt to find mines that would involve no risk to the capital sunk in them has tended to cripple the industry; the refusal of sundry so-called exploration companies to incur risk has stultified their operations and paralysed development. And I may add that this policy has warped the judgment of some otherwise brilliant engineers. The story is told that Marcus Daly sent a mining engineer on a scouting expedition; he examined many prospects, without finding anything worth while. Daly became impatient; he slapped the engineer on the shoulder and exclaimed: 'For God's sake, man, go out and spend some money.' There is too much of a desire to play safe by buying mines with large blocks of proved ore, and to make money by means of an enlarged scale of operations, increased skill, or improved methods of metallurgy. The finding of ore, which is the real adventure, is relegated to the background; it is not only the chief attraction of mining, but the one that wins the greatest reward. When the ore reserves of a mine are at a low ebb it may be the most speculatively attractive time to buy the property."

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THE RELAXATION OF STOCK EXCHANGE RESTRICTIONS.

What It Means to South Africa—More Capital for the Development of the Far East Rand—Sound Financial Position of the Union—A "Bull" Factor.

THE best news of the week is the cabled information to the effect that the Imperial Government has relaxed the restrictions on Stock Exchange dealings with this country. For five years the Johannesburg Exchange has "carried on" despite the restrictions upon business with London, and exhibited remarkable stability, not to say enterprise, during that period. Not the least of its public services has been the help afforded to the Union Government in placing its various loans, necessary to the prosecution of the war, and it has also played a large part in facilitating the financing of the Far East Rand and of various local industrial enterprises. It will be remembered that soon after the Armistice, a congratulatory cable was received from the London Stock Exchange, to which a reply was returned in similar terms. The removal of the restrictions on share dealings between Johannesburg and the financial centre of the world then became the great desideratum. To that end the Johannesburg Stock Exchange cabled asking the London Exchange to use its good offices with the Imperial Treasury to have the embargo on business removed. To the people on the other side who are in touch with affairs in the Dominions, the reasons why the step is desirable in the interests of all concerned doubtless suggest themselves readily enough. But the local Stock Exchange people nevertheless considered it right to place on record the reasons, as they viewed them, for the desired measure of relief, and

they therefore addressed a letter to the London Exchange setting forth in detail those reasons. Put briefly, they are as follows: (1) The expressed opinion of the local banks that the financial position of the Rand was at no period of its history sounder. (2) Insurance rates on scrip, etc., have now fallen back to the normal, almost nominal, rates prevailing before the war. (3) Dealings between Johannesburg and France have never been restricted, and the local market has steadily absorbed all the scrip our French allies have cared to dispose of. (4) Alien-owned scrip, both here and on the other side, remains safely in the hands of the Custodian of Enemy Property, and cannot, therefore, affect the question either way. (5) The Union of South Africa, like the other Dominions, has incurred heavy financial obligations due directly to the war, and should, therefore, be placed on an equal footing with the United Kingdom as a whole with respect to interchange of securities with London. Each of these reasons is, of course, capable of considerable elaboration, and several others might be adduced in their support. To us, a good and sufficient reason seems to lie in the fact that anything that promotes Stock Exchange dealings between here and London facilitates the flow of capital necessary to develop the Far East Rand. In this way the Imperial Treasury, by removing the restrictions, is assisting the industry of gold production and benefitting the whole of South Africa.

The list of certificates issued by the Mines Department for the months of May, June and July, 1919, is as follows: Mine managers' certificates, metaliferous: W. E. Barron, A. K. Craigie, J. E. Evans, E. G. Thomas, A. W. J. Troye. Coal: T. Graham. Mine overseers' certificates, metaliferous: T. G. Bell, H. Hammar, W. M. J. Kroesen, C. L. Larsen, E. V. Ley, J. W. Liddle, J. K. McNamara, T. Moralee, S. J. Snooke, N. T. Vehmoweth, P. Visser, J. Wilkes. Coal: A. Bird, J. Donaldson, J. Ferguson, H. J. Jones, L. S. Rule (non-fiery mines only). Mine surveyors' certificates: W. H. Gilbert, F. W. F. Jaeger, L. G. Thompson, M. P. Woolf. Assayers' certificates: W. Anderson, W. A. Cochrane, O. Jackson, J. P. O'Neill, A. R. Short, E. J. Welte, E. A. White. Mechanical engineers' certificates, mining machinery: T. E. Cowin, W. H. Fitt, H. Oates, R. V. Stoddart, A. Thom. Works only: H. Brownless, P. Fraser. Electrical engineers' certificates, works only: G. C. Brown. Mining Machinery: H. Dawson, A. Dingwall, E. Grafton, F. W. Joubert, S. J. Ladegaard, B. Pool, A. R. Walsh.

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THE YEAR WITH THE GENERAL MINING AND FINANCE CORPORATION.

The report of the General Mining and Finance Corporation for the year to December 31 last states that the profit, after deducting administration expenses, interest, etc., amounted to £25,131, and after adding the unappropriated profit brought forward for the previous year, there is a total credit to appropriation account of £74,672. The corporation's holdings of shares and debentures of other companies show a depreciation (in the aggregate) of £1,106,196, if taken at the market prices obtaining at December 31 last, as compared with a depreciation of £1,094,146 at the close of the previous year. The directors again point out that this depreciation does not represent a realised loss, but that any material improvement is largely contingent on the re-financing of certain of the companies under the corporation's control in which it holds large interests, and which require additional working capital for the re-commencement and continued prosecution of mining operations. The major portion of the share and debenture investments are in the nine mines under the management and control of the corporation. These are: Outcrop mines (producing): Aurora West United, Meyer and Charlton, New Goch, Roodepoort United Main Reef, Van Ryn Gold mines Estate, and West Rand Consolidated Mines. Deep-level mines (partially developed or waiting development): Cinderella Consolidated Gold Mines, New Steyn Estate Gold Mines, and Rand Collieries. A short resume of the operations for the past year of each of these companies appears in the report, which states that shares are also held by the corporation in other mining, estate, financial, and miscellaneous companies. The book value of these at December 31 last was £223,472. The corporation holds various mining properties, real estate and house property, etc., standing in the balance-sheet at £223,862. They include 612 claims in different sections of the Witwatersrand. The real estate and house properties are all situate in Johannesburg, and produce fair rentals. The reserve account against possible loss in this connection still remains at £70,000. In a general concluding statement the directors mention that in their annual report for the previous year they referred to the abnormal difficulties with which the production of gold was being attended, especially in the instance of the low-grade mines. They point out that the references in the report to the operations during the past year of the producing mines under the control of the corporation demonstrate in a practical manner the cumulative effect of those difficulties, which were, unfortunately, accentuated by a general shortage of native labour throughout the period, and particularly towards the end of the year when the influenza epidemic completely disorganised work on the mines. Working costs continued to rise throughout the year under review as the result of the constantly increasing price of essential stores and supplies, and of the additional war bonus paid to the white employees consequent on the increased cost of living. As illustrating the effect of all these disabilities the total working profit of the six producing mines of the group for 1918 (after deducting working losses) dropped to £357,209, as compared with the corresponding figure of £655,198 for 1917,

and if the profit earned by the high-grade Meyer and Charlton mine be excluded, the total working profits for the past year of the whole of the five remaining mines comes out at only £68,773. The directors stated in their previous annual report that every endeavour would be made to keep all the mines of the group running, but in view of the foregoing figures (and especially of the actual working loss for the past year sustained by two of these mines), it is obvious that one or more of these properties must close down in the near future unless practical relief be afforded in some direction. The outlook for such relief, however, does not appear promising at the present time. There is no sign of material decrease in the immediate future in the high level of costs of stores and white labour reached during and consequent on the war. Moreover, although the gold mining industry has been admittedly taxed to the hilt in past years, the Union Government and Parliament have during this session seen fit either to impose or allow the imposition of further crushing taxation, the effect of which can only be to hasten the suspension of operations on existing mines and discourage in the future the introduction of capital for the working of new or presently dormant propositions.

The Delagoa Bay Engineering Works secured the contract for the repair of the Zambesi coasting steamer which was recently salvaged after lying sunk for some two years. It is understood that the cost will be about £40,000, and the work will take five months.

Diamonds in West Africa.

In answer to numerous inquiries at the company's office in London, the secretary of the Goldfields of Eastern Akkum states that by the last mail, dated 3rd ult., the company's agent in West Africa reported the discovery of alluvial diamonds by the Government Geologist. The company has no further information on the subject.

Rhodesia, Ltd.

The report of Rhodesia, Ltd., for 1918 shows a profit of £1,253, which added to the balance brought forward makes a total of £4,344 now carried forward. The authorised capital now stands at £417,275, divided into 4,172,748 shares of 2s. each, and the issued capital at 31st December last stood at £149,017, divided into 1,490,168 shares of 2s. each. During the year 272,000 shares were issued in connection with the purchase of debentures of the Town Properties of Bulawayo, Ltd. Since the date of the accounts a further 1,218,168 shares have been issued for cash. The company in no way benefited during the year from the recent share issue, but the proceeds have now placed it in a greatly improved position. The company now hold 716 mining claims, as compared with 708 at the end of 1917. Certain claims having no value have been allowed to go to forfeiture, and others have been pegged for the protection of properties carrying on reduction operations. No change in the land holding of the company has taken place during the year, the area remaining at 216,972 acres.

Record Aeroplane Speed.

Flying a Fiat B.R. biplane, Mr. Brack-Papa established a world's record on June 27th, by attaining a speed of 255 kilometres an hour (158½ miles) with two passengers aboard. The flight was officially controlled and the speed certified by a Commission of the Aero Club of Italy. This is the highest speed ever attained in any element; the previous record was 113 miles an hour established by the French pilot, Sadi-Lecoint, on a two-seater Spad biplane. Brack-Papa and his two passengers made their official flight over the Mirafiori aerodrome, in the suburbs of Turin. The Fiat B.R. was designed and produced a short time before the armistice as a fast bomber and reconnaissance plane, with a useful load capacity of one ton. It has a wing span of 51 feet 9 inches, and an over-all length of 32 feet. The total bearing surface is 775 square feet. The engine used is a 700 h.p. Fiat with 12 cylinders in V. The cylinder dimensions are 170 by 210 mm. bore and stroke. This engine is the biggest single unit for aviation purposes in the world.

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WHAT THE RHODESIAN MINES BUY.

The following list shows the value, at place of purchase, of the imports of the principal mining material and stores into Southern Rhodesia in the last two years. The particulars are taken from the Customs Returns:

	1917.	1918.		1917.	1918.
Acid, sulphuric	£3,674	£4,792	Lead—		
Assay apparatus	5,290	1,968	Bar and sheet	335	97
Blasting compounds and dynamite ..	90,649	91,040	Foil and Acetate	175	168
Borax	2,575	3,103	Pipes and piping	15	5
Candles	41,677	41,500	Lime	1,029	2,861
Caustic soda	627	1,060	Litharge	1,062	362
Cement	558	381	Machinery—		
Coal, coke and patent fuel	558	2,042	Bands and belting	19,247	22,965
Composition, metal	3,368	1,867	Buckets and trucks	1,296	2,573
Composition, boiler	190	347	Electrical	3,518	4,956
Copper, plate and sheet	991	483	Mining	62,003	53,366
Copper, bar	679	162	Packing	5,076	5,656
Cyanide of potassium	—	141	Parts	29,411	45,915
Cyanide Sodium	73,457	72,486	Pumps	6,859	8,962
Detonators and fuse	32,196	27,082	Oil—		
Electric Fittings	8,437	18,876	Castor	635	5,816
Fire bricks and clay	72	307	Colza	2	23
Grease, antifriction	4,499	7,391	Lubricating	16,201	22,001
Iron and Steel—			Quicksilver	5,923	5,435
Angle, channel and T	1,160	2,050	Tramway material	1,770	650
Bar, bolt and rod	24,207	34,348	Waste, cotton	1,081	3,355
Chains	1,441	2,680	Wire Rope	3,811	4,385
Girders, beams, joists	895	3,288	Wood—		
Galvanised	861	2,709	Handles for picks, etc.	2,127	1,679
Galvanised, corrugated	6,763	6,023	Unmanufactured	18,336	26,383
Pig and ingot	2,310	449	Zinc	11,906	37,973
Pipes and piping	13,439	11,148			
Plate and sheet	5,807	1,041	Totals	£554,234	£600,353

Zaaiplaats Tin.

The directors beg to report as follows for the quarter ended 31st July, 1919: The mill ran on 79 days during the quarter, crushing 5,030 short tons, the duty per stamp being 8.3 tons per 24 hours. The output for the quarter amounted to 99 long tons of concentrates, assaying 72.7 per cent. metallic tin. The results of working show an estimated profit for the quarter of £1,109 5s. 5d., excluding directors' fees and Government taxes. Seventy-six long tons of refined tin, assaying 99.3 per cent. metallic tin, were produced by the smelter. The expenditure on capital account amounted to £2,020 19s. 4d., as follows: Machinery and plant, £1,542 3s. 4d.; buildings, £30; roads, £448 16s.; total, £2,020 19s. 4d. Mining was carried on throughout the quarter in Nos. 13, 5 and 6 sections and the T.C.L. lease. The developments in No. 13 section have been very unsatisfactory. Towards the end of June No. 3 branch of this section, which had previously provided 90 per cent. of the output, holed into the main face, which then became the only body of ore in sight. As this face was full of impurities and contained practically no tin, it did not pay to send the ore to the mill. A vigorous development policy was immediately initiated, and all faces which held out the faintest hope were pushed ahead as fast as possible. At the end of the quarter there was no improvement to record in any face. No. 5 section carried no values throughout most of the quarter, but towards the end of July tin reappeared, and at the present moment there is a small face of low-grade ore. No. 6 section has been de-watered and exploratory work is being carried on in two faces. The pipe in the cross-cut measures about 6ft. by 4ft. of good-looking pipe matter, but carries no tin. Prospecting work is being carried on in No. 23 pipe, out nothing of interest has been discovered. The T.C.L. Lease yields ore of a patchy nature, and by close sorting a

small quantity of good-grade rock is obtained. If there is no improvement underground the output will continue to be seriously affected. During the quarter 5,559 tons of ore was mined and disposed of as follows: Waste sorted, 529 short tons; sent to mill, 5,030 short tons; total, 5,559 short tons. Valley Alluvium: During the quarter 25,600 cubic yards of overburden was removed. The temporary plant has been running intermittently since the middle of July. As the workings are in the poorest portion of the ground and are still 20 feet above bedrock, it will be some time before there is any appreciable output from this source. Native Labour: Recruiting was stopped at the beginning of June as the supply is ample for all requirements. Rainfall: 0.22 inches of rain fell on two days during the quarter. Dividend: In view of the unsatisfactory situation at the mine and of the consequent necessity for husbanding the resources, the directors have decided to pass the dividend for the six months ended 31st July.

The Société Pour Valuers de Fer et d'Acier Schaffhouse (Switzerland) notify us of the existence of the Metallurgical Exchange, Tonhalle, Zurich, Switzerland, and invite those interested to visit the exchange during their stay in Switzerland in order to secure connections. The exchange is visited every Friday from 2 to 4 o'clock by Swiss and foreign manufacturers, by foreign consuls, etc.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the *S.A. Mining Journal*. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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Latest From the Robinson Deep and Sub-Nigel.

ROBINSON DEEP, LIMITED.

THE following is a summary of the operations of this company for the quarter ended 30th June, 1919. The development footage accomplished during the quarter amounted to 1,784 feet, the footage sampled being as follows: Main Reef: Footage Sampled, 133; reef width, inches, 28.0; reef value, dwts., 2.7. Main Reef Leader: Footage sampled, 299; reef width, inches, 17.6; reef value, dwts., 19.8. South Reef: Footage sampled, 255; reef width, inches, 17.3; reef value, dwts., 23.2. Tons milled, 147,500. Working profit (including sundry revenue), £20,191, less, however, £8,207 appropriated during the quarter in respect of special expenditure due to war. Contributions to Miners' Phthisis Compensation Fund, Government taxation, etc., including also interest on joint loans from the guarantors. Gold in reserve, nil. The ore crushed increased by 32,100 tons as compared with previous quarter. Yield was down by nearly 3d. per ton milled, but working costs dropped by about 3s. 6d. per ton, resulting in a profit of 2s. 8d. per ton milled as against a loss of 7d. per ton milled for the preceding quarter. The total profit of £19,605 compares with the loss of £3,414. This improvement is partly the result of having work more thoroughly established in the new (Chris) shaft section and to improvement in the native labour position at this mine. The average number of boys employed was 3,747 as compared with 3,409 for the previous quarter. The development for the last quarter was an increase of 802 feet over the preceding quarter, and it is expected fully to maintain this increased rate. The additional loan of £100,000 (over and above the joint loan of £300,000) which was mentioned at the annual meeting last April, has been drawn upon to the extent of £81,000.

THE SUB NIGEL, LIMITED.

The following is a summary of the operations of this company for the quarter ended 30th June, 1919. The development footage accomplished during the quarter amounted to 3,636 feet, of which a distance of 3,180 feet was advanced on reef; 2,750 feet were sampled, of which 1,020 feet gave 14.3 dwts. over a stoping width of 42 inches, whilst the average of the balance of footage sampled was not within the pay limit. Tons milled, 30,250. Working profit (including sundry revenue), £17,331, less, however, £2,789 appropriated during the quarter in respect of special expenditure due to war. Contributions to Miners' Phthisis Compensation Fund, additions and renewals fund, Government taxation, etc., gold in reserve, £12,880. Dividend No. 13 of 5 per cent., absorbing £31,250, was declared on 25th June, payable to all shareholders registered on the books of the company at the close of business on 30th June, 1919. At the 30th June the new vertical shaft had reached a depth of 1,809 feet. The ore milled increased by 3,250 tons; revenue, however, was 1s. 11.737d. per ton less than for previous quarter, while working costs were down by 8.398d., the net result being that the total profits were less by £3,956. The native labour position on this mine is fairly satisfactory, the average number of boys employed during the quarter being 1,269 as against 1,023 previously. The increasing rate of development has been continued, footage for the quarter being 873½ feet more than for the preceding quarter. Ore reserves as at 30th June, 1919, are estimated at 342,000 mine tons of fully developed ore of an average value of 10.3 dwts. per ton and 59,000 mine tons partially developed ore of an indicated value of 10.1 dwts. per ton, or a total average of 401,000 mine tons fully and partially developed averaging 10.27 dwts. per ton. For the half year ending 30th June the reserve tonnage and grade have changed very little. The new chute referred to in the last quarterly statement, encountered on the 16th level drive east of "B" shaft, was sampled for a distance of 350 feet, the value being 9.5 dwts. per mine ton over a stoping width of 42 inches. This drive is still in payable ore. In "C"

shaft section development disclosures in the 17th and 18th levels indicate a continuation of the pay chutes. Your consulting engineer says that it is encouraging to know that what is at present correlated as the 16th level pay chutes are now fairly definitely known to extend to plane of the 18th level, but it is too early to attempt to indicate what the general effect of these recent values may be on the ore reserve position of the mine before at least determining the full width and value of these pay chutes. Recent winze disclosures in the "D" shaft section and in the eastern chute of "E" shaft section have been irregular.

Modder B.

The report of the directors of the Modder B. for the quarter ended 30th June shows total footage 4,881 feet; total footage sampled on reef 3,265 feet. The payable reef disclosures were as follows: Main Reef Leader, 2,230 feet; width, 27 inches; assay value, 28.1 dwts. The tonnage crushed was 163,500 tons, while the yield per ton was 10.456 dwts. The main features of the period compared with the previous quarter showed an increase of 3,500 tons in output, a reduction of 1s. 9d. in yield, 11d. in working costs per ton milled, and £2,169 in working profit. Development operations were well maintained, with satisfactory reef disclosures. The heading from the Geduld Proprietary Mines advanced a further 315 feet, disclosing 35 inches of reef of an average value of 18.1 dwts., or 634 inch-dwts. At the new shaft a considerable amount of construction work has been completed, and it is expected that sinking will commence early in August. The total working expenditure was £174,536, and the working profit carried down £186,223, or 22s. 9d. per ton milled.

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THE WEEK IN THE SHAREMARKET.

Heartening Effect of Excellent News—Relaxation of London Restrictions—Modder Easts A Big Feature—Several Notable Advances.

A big increase in business, accompanied by several notable increases in prices, has been the feature of the week. The main cause is of course the relaxation of the restrictions on dealing in London, and to this has to be added good news from several of the mines. Modder Easts have again been the most active and favoured stock, and on Wednesday and Thursday were in great demand. Shares, options and debentures all advanced in unison, and it is difficult to say where or when the rise in them will stop. Van Ryn Deeps also enjoyed increased activity, on the news of better development at the mine, and New Modders and the other Far East shares were all purchased in considerable quantities. Tin stocks have not been so active. In diamonds, Crowns remained steady at about the same price, but Frank Smiths had a spurt on the good news from London, which should hasten the restarting of operations at the mine. The volume of business seems to be growing steadily, and the outlook for the market generally is more favourable than it has been for a long time.

	Fri. 15th.	Sat. 16th.	Mon. 18th.	Tues. 19th.	Wed. 20th.	Thurs. 21st.
African Farms . . .	12 6*	12 6*	12 6	12 6	13 0	14 0
Anglo-Amer. Corp. . .	—	21 0*	—	24 0*	—	25 6
Apex Mines	7 0*	7 0*	—	7 3†	7 2†	7 0
Aurora Wests	—	—	—	6 6	—	6 9*
Bantjes Cons.	2 11*	2 9a	3 0	3 3†	3 0*	3 2
Brakpan Mines	63 6	63 0*	63 0*	—	65 0	62 3*
Brick and Potteries . .	4 6*	4 6*	4 6*	4 6*	—	4 6*
British S.A.	22 6*	22 9*	—	—	—	—
Bushveld Tins	1 10	1 11	1 11*	1 11*	1 11	1 9*
Cassell Coals	30 0*	30 0*	—	—	30 0*	30 0*
Cinderella Cons.	—	4 10*	4 10*	—	4 10*	5 0*
City and Suburbans . .	7 0†	7 0†	6 6*	7 0†	7 6	7 6
City Deeps	56 0	55 6*	57 6†	57 0†	57 6	57 6
Clydesdales Colls. . . .	22 0*	22 0*	22 0*	22 0*	22 0*	22 0†
Con. Investments	27 6*	27 6*	27 6*	28 6	28 0*	—
Con. Langlaagtes	18 6*	18 6	18 0*	19 6†	18 3*	18 9
Con. Main Reefs	10 3*	10 3	10 2	10 0*	11 0	12 3
Con. Mines Selections . .	25 6*	23 9*	23 9	24 0	24 3*	26 0*
Coronation Freeholds . .	1 9*	—	1 9	1 9*	1 10*	1 11
Crown Diamonds	25 9	22 9	23 6	23 6	23 3	22 9
Daggafontein Mines . .	21 0*	21 9	—	21 9	22 3	23 9
E.K. Coals	2 6	2 6*	2 6*	2 7*	2 10	2 10
E.R. Deeps	0 10*	0 10*	0 10*	0 10*	0 10*	0 10*
E.R. Minings	20 0*	20 0*	20 0*	20 0*	20 0*	21 0*
E.R. Proprietary	6 1*	6 1	6 0*	5 11*	6 4	6 0
E.R. Debentures	£65*	£65*	£65*	£65*	£70	£66*
Eastern Golds	—	1 3*	1 3*	1 3*	1 3*	1 6†
Frank Smith Dmds. . . .	4 10*	4 10	4 10*	4 10	4 10	5 0
Geduld Props	47 3*	47 3*	47 3	47 6*	—	48 0
Geldenhuis Deeps	8 0†	—	—	—	—	10 0†
Ginsbergs	—	—	—	1 6*	—	1 0*
Glencairns	—	—	—	1 0*	—	1 6*
Glencoe Collieries . . .	—	—	5 6	5 0*	—	6 0*
Glynn's Lydenburgs . . .	15 9*	15 0*	16 6†	16 6	—	15 0*
Govt Areas	90 3*	90 0	89 6	90 6	90 0*	91 3
Jhb. Bd. of Ex.	32 0*	32 0*	32 0*	32 0*	32 0*	32 0†
Jupiters	4 3*	—	4 9†	4 3*	4 3*	—
Klerksdorp Props. . . .	1 4	1 4*	1 5	1 6*	1 6*	1 6*
Knight Centrals	6 5*	6 6*	—	6 6	6 8	7 4
Knights Deeps	—	7 6†	—	5 6*	6 0*	7 0
Lace Props	16 6*	16 6*	17 6	18 9	20 3	20 0
Leeuwpoot Tins	24 3*	24 3	24 0	23 9*	24 3*	25 6
Luipaardsvlei Est. . . .	3 6†	3 6†	—	—	—	—
Lydenburg Farms	8 1*	8 1*	8 3	8 2*	8 4	8 9
Meyer and Charltons . .	—	—	—	90 0†	90 0†	90 0†
Middelvlei Est.	1 8*	—	1 8*	1 7*	1 9*	1 10
Modder B's	165 0*	165 0*	165 6*	166 0	166 0*	167 6
Modder Deeps	165 9	—	163 0*	166 0*	168 0*	170 0
Modder Easts	25 0	25 9	26 7½	25 9	28 9	28 10½
Do. Opts. (3 yrs.) . . .	7 4	7 8*	8 5	8 1	9 9	10 0
Do. Opts. (4 yrs.) . . .	8 4	9 0	10 5	10	11 8	11 7
Hume Pipes	26 0*	26 0*	26 0*	26 0*	26 0	26 0
Langlaagte Estates . . .	17 6*	17 6*	17 6*	—	17 6*	—
Natal Navig. Colls. . . .	23 0*	—	23 0*	23 0*	23 0*	23 0*
National Banks	300 0†	300 0†	300 0†	300 0†	300 0†	298 9†
New Boksburgs	—	1 6*	—	—	—	1 6*
New Eland Dmds.	26 0†	24 6*	25 0*	24 0a	25 0*	26 0*
New Era Cons.	10 9*	10 9	11 0	11 0	11 0	—
New Geduld Deeps	4 7*	4 7*	4 7	4 7*	4 7*	4 9*
New Heriots	—	6 0*	6 0*	7 6	8 6	8 6*
New Kleinfonteins	9 6*	9 6	—	10 0	10 3	11 0
New Modders	£26¼*	—	—	£27*	£27¼a	£27½

*Buyers. †Sellers. aEx London. bOdd lots.

	Fri. 15th.	Sat. 16th.	Mon. 18th.	Tues. 19th.	Wed. 20th.	Thurs. 21st.
New Primrose	2 6*	—	2 6*	—	2 10*	2 6*
Nigels	6 3*	—	—	6 6*	6 6*	6 6*
Noorse Mines	12 0*	12 6	12 9*	13 3*	13 9	13 6
Premier Deferreds . . .	—	—	160 0*	160 0*	—	—
Premier Preferreds . . .	152 6†	—	152 6†	—	—	—
Pretoria Cements	78 0a	78 0	78 0	79 0	83 0	88 0
Princess Estates	2 0*	2 1*	2 1*	2 1	2 0*	2 4
Rand Collieries	—	3 3*	3 3*	3 3*	—	3 6*
Rand Mines	—	—	—	—	65 0†	65 0†
Rand Nucleus	1 9*	1 9*	1 9*	1 10*	1 9*	1 9
Rand Select. Corp.	72 6*	72 0*	71 6*	73 0*	72 6*	73 6
Randfontein Deeps	4 6*	4 9	4 9	—	4 9*	5 0
Randfontein Estates . . .	17 6*	18 0	—	18 3†	18 0	17 9
Roberts Victors	13 0*	13 0*	13 0*	—	12 6*	13 0†
Rooibergs	6 9†	6 6*	6 9†	6 9†	5 9*	5 10*
Ryan Nigels	4 0*	3 9*	3 9*	3 9*	3 10*	3 9*
Shebas	1 9†	1 3*	1 3*	1 3*	2 0	2 0
Simmer and Jacks	3 6†	—	3 6†	3 6†	3 6†	3 6†
Simmer Deeps	—	1 3*	—	—	1 9	1 10*
S.A. Breweries	32 6*	—	—	32 6*	32 6*	35 0*
S.A. Lands	5 10*	5 10*	5 10*	5 10	4 9*	6 6
Springs Mines	47 3	47 0	47 0	47 0*	49 6	49 9*
Sub-Nigels	21 0*	21 0*	21 0*	21 3	23 0	23 0
Swaziland Tins	—	16 0*	18 0†	15 0*	15 0*	15 6*
Transvaal Lands	—	—	—	—	—	28 0*
Trans. G.M. Estates . . .	13 0†	12 6*	13 0†	—	12 9*	12 9
Van Ryn Deeps	72 6	73 9	74 9	75 0	75 0	76 6
Van Dyks	2 0*	2 3*	2 3*	2 3	2 3*	2 3
Village Deeps	14 0*	15 0*	16 0	14 9*	15 0*	15 0*
Welgedachts	—	—	—	27 6†	—	—
Western Rand Est.	4 0*	—	1 6	4 6*	4 6*	5 0*
Witbank Collieries	58 0*	—	—	60 0*	60 0*	61 3*
Witwatersrands	—	—	—	—	15 0*	16 0*
Wit. Deeps	13 9*	14 0*	13 9*	14 3†	13 6*	13 6
Wolhuters	2 11	—	2 11*	2 11	3 0	3 0
Zaaiplaats Fms	7 7	7 6*	7 3	7 6	7 6*	7 6
Union 5 per cent.	£104*	£104	—	£104	£104*	£104*
New State Mines	28 6	28 6	27 9	29 0	29 3	29 6
South Van Ryns	8 10*	8 10	8 10	8 11	8 10	9 3
S.A. Alkan	19 6	21 0	20 0*	19 0*	21 0	20 6*
Tudors	1 2†	1 2†	1 2†	1 2†	—	1 2†
Tweefontein Colls.	24 6*	24 6*	24 6*	24 6*	25 0*	25 0*
West Springs	23 0	22 6*	23 0	22 9*	24 6	25 9
Do. Options	5 6*	5 3	5 3	5 3*	7 6	8 4½

Dry Rot in the British Coal Trade.

Under control and, latterly under the conditions imposed by the Sankey award, the British coal trade has gone from bad to worse. Sir Auckland Geddes has had to admit that "the position is serious." The output from July, when the reduced working hours come into force, is estimated to be between 214 and 217 million tons a year, as compared with 287 million tons in 1913. The consumption for home use and for bunkers has fallen from 210 million tons in 1913 to 196 million tons in 1918, and the exports from 77 million tons to 34 million tons. Not only is rationing to continue, but the price to home consumers is to be advanced, for, after guaranteeing profits to the owners of 1s. 2d. a ton (a profit at which many collieries cannot work), the estimated deficiency in the working of the industry is about £46,600,000, which is equal to 4s. 3d. a ton of output, and means an increase of 4s. 6d. a ton to the consumer, if the deficiency is not to fall on the taxpayer. What a confession of failure! Four years of Government control have reduced a brisk and flourishing industry to virtual bankruptcy. The British coal trade—which, under private enterprise before the war, was a great basic industry, supplying cheap coal to the home consumer, carrying on an important export business without parallel in the world, which provided a staple outward freight for ships and cheapened everything imported from overseas—cannot now be worked without a loss of £46,600,000 per annum, if indeed that is the limit of the loss which the country will have to bear. No wonder that, to quote from the daily Press, the statement of Sir Auckland Geddes "created a sensation in the Lobby." It has done more than that. It has created real alarm in Great Britain and growing irritation, which may spell an end to Government Control.

THE VAAL RIVER AND ITS POSSIBILITIES.—III.

[By W. INGHAM, M.I.Mech.E.]*

IRRIGATION BY PUMPING.

The question of pumping water for irrigation has been discussed on many occasions, and I wish once again to state that irrigation by pumping will pay in every case where the higher priced crops can be grown. Take lucerne (alfalfa) as an example. The quantity of water required *per acre crop* may be taken at about 100,000 gallons, which is about a $4\frac{1}{2}$ inch watering. A ton of dried hay can be obtained *per acre crop*, and at 5s. *per 100 lbs.* the return will be £5. The revenue for six crops each year will therefore be £30, and after deducting, say, £15, for working expenses, such as harvesting, transport, railage, marketing, etc., there is a balance of £15 or £2 10s. *per crop*. Water can be raised at less than 1d. *per 1,000 gallons* for lifts of under 100 feet by well designed pumping plants; so taking 600,000 gallons as the quantity of water required for six crops, the cost at 1d. *per 1,000 gallons* will be £2 10s., or 8s. 4d., *per acre crop*. This leaves a profit of £2 1s. 8d. *per acre crop*, or £12 10s. *per acre annum*. Land under such conditions, which is worth about £4 to £8 *per acre* before being irrigated, is often worth from £100 to £180 *per acre* when planted with lucerne or first-class citrus trees of five years' growth.

EXISTING IRRIGATION SCHEMES.

The existing storage and gravitation schemes above the confluence of the Vaal and Orange Rivers irrigate about 3,200 acres, while the existing pumping plants irrigate about 7,000 acres. There are at present 43 pumping plants between Vereeniging and the confluence, and it is estimated that there are about 60 pumping plants on the whole length of the Vaal.

ESTIMATED AREA OF IRRIGABLE LAND.

About 500,000 acres are available for irrigation within the Vaal River catchment area, and the greater portion of the area is downstream of Vereeniging. The quantity of water required for irrigating 500,000 acres, taking an all-round figure for the various classes of crops and fruit trees, will be about 50,000 million cubic feet, and owing to occasional years of low flow, it will be absolutely necessary to impound sufficient water in storage reservoirs to cover a period of at least 18 months. It should, however, be mentioned that although the catchment area above Vereeniging is only 16,319 square miles as compared with 46,087 square miles at Kimberley, the actual discharge at Kimberley over the period 1900-1904 was only 1.9 times as much as at Vereeniging.

GENERATION OF POWER FROM COAL FIELDS ADJOINING THE RIVER.

There are several places on the Vaal River Coal Fields where cheap electrical power can be generated for driving pumping plants for irrigation. The power could be generated at the pit mouth in the neighbourhood of Vereeniging, Coal Mine Drift, or other suitable sites, and a transmission line erected on the bank of the river for driving pumps situated on the pools about one mile apart for a distance of 100 miles up and downstream of the central stations. The transmission line could also be used for driving agricultural implements and machinery. Fertilisers could also be made from coal at the central stations, and from such a combination of consumers a good load factor would be obtained. The line losses would be comparatively small (about 10 per cent.), and the price of current should not exceed 0.4d. to 0.5d. *per unit* at the point of usage. The Rand Mines Power Company is in an excellent position for providing such power in the neighbourhood of Vereeniging, and as the sell-

ing price of current at present is only 0.525 *per unit* on the Rand, there is no reason why a lower price should not be obtained if a large number of farmers agreed to take current. Although there are few places on the Vaal River suitable for power development on a large scale without impounding reservoirs, there are many places where small power stations can be installed. The erection of large power stations on the lines referred to above would, however, probably be cheaper than a number of individual small schemes. A small turbine plant of about 50 horse-power has been installed at Parys, but this power can easily be increased by piping the water from the present weir to the lower end of the falls.

CONSERVATION OF WATER.

The question of conservation of water is one which should be seriously considered in connection with all South African Rivers, as the quantity of water which is allowed to run to waste into the sea is simply appalling. The Vaal River at Vereeniging discharges from 89,237 million gallons in a dry year to 3,261,400 million gallons in a wet one, and it is hoped that a large proportion of this water will sooner or later be impounded for irrigation and industrial purposes. One of the principal difficulties will be the silt problem, but this can be overcome by the provision of barrage gates or a sufficient number of under sluices in solid dams. A good example of the former method is now under erection by the Rand Water Board at the Vaal River Works, about 25 miles downstream of Vereeniging, and the reservoir in this case will back up the Vaal River for a distance of nearly 40 miles. The quantity of water impounded by the Rand Water Board Barrage will be 13,633,000,000 gallons, and the total cost will be about £285,000 or £21 *per million gallons* stored. If the water was used for irrigation instead of supplying water for domestic and industrial purposes to the Rand, the area which could be irrigated would be about 25,000 acres. The cost of impounding is therefore reasonable if large irrigable areas are available within a reasonable distance from a dam site.

IRRIGATION ACT NO. 8 OF 1912.

According to the Irrigation Act No. 8 of 1912, the water of a public stream is subject to use for primary, secondary and tertiary purposes. (a) Primary use is for water used by stock and for domestic purposes. (b) Secondary use is for irrigation. (c) Tertiary use is for mechanical or industrial purposes. The development of power will therefore come under tertiary use, but the water is subject to a reasonable secondary use for lower riparian owners. In storing water for tertiary purposes provision must therefore be made for the protection of lower riparian owners, and the Water Court will fix the "normal flow" of the stream. This is in practice usually based upon the dry weather flow during the months of May, June, July, August, September and October, but it does not follow that such a period is or will be taken as the basis. In the case of the Rand Water Board's Act, the average flow *per day*, taken over a period of 10 years for the months May to October (inclusive), was taken as the basis, and although the actual figure was only 167 cusecs, the normal flow at the barrage site was fixed at 250 cusecs.

(To be continued.)

The Lonely in July.

The following are particulars of output of gold, etc., from the Lonely Mine for the month of July, 1919: Mill ran 728 hours; crushed, 4,650 tons; fine gold recovered, 2,047.275 ozs.; value, £8,607 18s.; slimes treated, 4,650 tons; fine gold recovered, 3,878.127 ozs.; value, £16,307 19s. 2d.; total fine gold, 5,925.402 ozs.; total value, £24,915 17s. 2d.; profit, £13,158 17s. 8d.

Excerpt from Presidential Address read before the S.A.A. for the Advancement of Science.

Correspondence and Discussion.

Comments on Questions Arising in Technical Practice or Suggested by Articles in the Journal—Views, Suggestions and Experiences of Readers.

The Caisson System of Diamond Recovery.

To the Editor, *S.A. Mining and Engineering Journal*.

Sir,—In the correspondence columns of your Journal of the 16th inst. a letter from Mr. J. H. Anstruther MacAdam appears under the above heading criticising your paragraph in the issue of July 19th on the "Possibilities of Deep Water Diamonds." Mr. MacAdam is apparently labouring under a wrong impression or has been misinformed. I applied for a patent in respect of a caisson two years prior to the appearance of the MacAdam caisson venture of 1917 and exhibited a working model at Bettelheim Buildings. The MacAdam caisson consisted of a cylinder of 6ft. diameter throughout its length, allowing room for one native only to work on the river bed, but no room to efficiently use a pick or crowbar, whereas my caisson is 15ft. in diameter or six times the area of MacAdam's, allowing ample room for from 10 to 20 natives to operate on the gravel in the river bed and to handle and deal with boulders of any size. The connecting shaft of my caisson between the working bell and the air lock and ore chute built in sections for various depths, through which the workmen descend and ascend and through which gravel is hoisted, is only 33 inches in diameter, thus offering little resistance to the current and has a small displacement. The MacAdam caisson was kept down by suspending the pontoons carrying the plant from the caisson cylinder, in consequence of which the whole

outfit was top heavy and was constantly toppling over. The control for lowering and raising my caisson is by means of water ballast, 18 tons of which is carried in the ballast tank surrounding the air lock and ore chute. MacAdam's arrangement of air locks subjected the native discharging gravel to a variation of pressure of from one to two atmospheres every time the bucket was lifted. There were numerous other defects, in fact a comparison between the MacAdam caisson and that being built for the Deep Water Diamonds, Ltd., is like comparison Noah's Ark with one of our modern leviathans.

On the failure of the MacAdam Diamond Syndicate I leased the plant with a view to obtain practical experience of the conditions appertaining to the recovery of diamonds from the river bed and to test the bed prior to constructing my patent caisson, the results obtained satisfied me of the feasibility of the scheme given an efficient caisson, and also confirmed the generally held opinion of the richness of the deep pools of the Vaal. The "Caisson Diamond Syndicate," formed in Rhodesia in 1913, to which Mr. MacAdam refers, was not fully subscribed owing to the then financial depression and no plant was constructed. Shareholders in Deep Water Diamonds, Ltd., and others who have inspected the workings, drawings and model of the plant now being constructed have been shown photos of the MacAdam caisson in operation and its history and various defects fully narrated to them.—Yours, etc.,

FABIAN MERCER COX.

PERSONAL.

The following appointments have been made at the principal Johannesburg branches of the Standard Bank: Mr. G. F. le Sueur, manager, Commissioner Street Branch; Mr. Percy E. Welsh, assistant manager, Commissioner Street Branch; Mr. Robert Welsh, manager, Eloff Street Branch. Mr. Le Sueur and Mr. Percy Welsh have held their present appointments in an acting capacity since the bank lost the services of the late Mr. Lewis and the late Mr. Beswetherick in May last. Mr. Robert Welsh was manager at the Standard Bank's branch at Pietermaritzburg.

* * * *

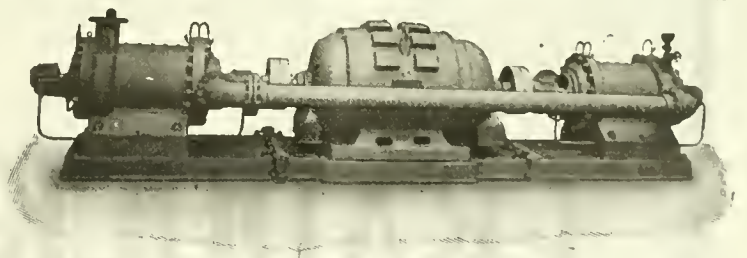
Mr. C. H. Merz, of Messrs. Merz & McLellan, London, has arrived in this country for the purpose of completing the investigation and report in regard to the electrification of certain sections of the South African Railways. Mr. Merz, who probably is the leading authority in the electrical world in Great Britain, has been closely in touch with developments in the electrical field in America and on the Continent of Europe. His firm have carried out investigations in many parts of the world. Reuter's Agency understands that during Mr. Merz's visit to South Africa the Government have entrusted him to advise them in a preliminary way with regard to the production of electric power generally in the Union.

American Trade with South Africa.

The Lucey Manufacturing Corporation of America, whose New York office is at 2334 Woolworth Building, manufacturers of iron and steel products of every description, have appointed Messrs. Stewart, Sanders & Co., Ltd., of 205 President Street, P.O. Box 4422, Johannesburg, their sole agents for Africa. We understand that the latter have secured some excellent orders from different parts of this country, although they have only recently taken over the representation of the Lucey Manufacturing Corporation.

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JOHANNESBURG.

TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

**Great Britain's Participation in British Dyestuff Corporation, Ltd.—The Coming Competition—
South African Aerial Activity—Leather Up 60 per cent.—Oils, Colours and Glass—
Iron, Steel and Machinery—Timber and Building Materials—Second-hand
Timber and Iron—Bricks, etc.—Hume Pipes.**

THESE are momentous times in the commercial world, therefore there is justification for looking abroad for some of our news, because the question must be of paramount importance as to what other countries are doing, so that we can arrange our commercial plans accordingly. For example, what is happening in Britain is altogether different from all procedure in pre-war days. Thus, the British Dyestuffs Corporation, Ltd., has been formed with a capital of £10,000,000, in shares of £1 each, of which the British Government has actually taken £1,700,000. The first great point is that the British Government has entered into this company in very earnestness and what is more paid nearly two millions into it and 97 per cent. of the shares has already been purchased. The next great point is that a proclamation has been issued which says: "In order to safeguard this particular industry against the great efforts which these great German dye-making firms are certain to make after the war to destroy all we have accomplished through the war, and to make this industry again subservient to Germany . . . importation of all foreign dyestuffs shall be controlled by a system of licences for a period of not less than 10 years after the war." Amongst a large number of regulations there are to be two Government directors, who will have absolute power to veto any vote or resolution of the board, also the Board of Trade will prevent shares in the company held directly or indirectly by foreigners. The profits made by four of the chief German companies in 1913 were just over two millions and a half, and also in connection with the restrictions on importations Mr. Lloyd George in his recent speech said the Government would take effective measures against dumping. The Board of Trade will be given power to shield unstable industries by prohibiting imports except under a licence on the products of those industries and preventing excessive imports of such products. Where the import prices were lower than in the United Kingdom an import duty will be charged for licences. All these things are an extraordinary commercial revolution as compared with the old methods before the war. These important matters are referred to here because the session of our Parliament will be opened on September 5th. Undoubtedly each member of Parliament representing any and every kind of industry should be alive to the new order of things. During the war many manufacturers had of their own initiative and many more through the persuasion of their friends entered into undertakings, and now it is up to the Government to see what can be done to strengthen the manufacturers' hands to stand against the outside competition. We shall have a great and incisive competition from all the world over. It is a difficult matter to make suggestions, therefore it is all the more up to the individual members of Parliament to see what can be done in this direction. A manufacturer states that ours are the lightest customs duties under the sun, therefore it is just possible a few alterations with an earnest purpose of doing something for our own people may assist very materially. The question is whether all the world will make this a dumping ground, and we certainly are very favourably situated to that end. Therefore we must be up and doing.

THE COMING COMPETITION.

There are many of the recently interned at Maritzburg to be seen daily in Johannesburg. Many seem to have something to do, and so far as can be noticed they are behaving themselves and are quiet in their demeanour. It is said that a goodly number of Johannesburg merchants have sent indents to Central Europe for goods, as naturally there must be quantities there made during the war period. There is no doubt a little exaggeration in the statement one hears about quantities likely to come from that quarter, but there must be a lot of truth in it. Each South African has to buckle to and work harder to get more production and more out of his efforts, as the people who have had an enforced holiday at Maritzburg will come out with renewed vigour to get ahead again of our lassitude and inertness. Remember this is only our own country so long as we can make progress and obtain something to put in the stocking for a rainy day.

SOUTH AFRICAN AERIAL ACTIVITY.

In keeping these notes up to date, mention must be made of the aerial commercial ventures, as when these are established, obviously a lot of business will be inaugurated amongst our merchants. One never thought when the first few motor cars made their advent into Johannesburg that we should have almost a quarter of our business taken up directly or indirectly through that source. This aerial transport may some day become a good second for the purpose of commercial business. This country, with its sunshine and fine weather, should be an ideal place for aeroplanes and airships, and as the towns have long distances intervening that also should be a great factor in their favour. Naturally there will be initial difficulties, which are one of the penalties to be paid when a new undertaking comes into existence. The enthusiasm of the promoters and those concerned seems immense.

LEATHER UP SIXTY PER CENT.

A telegram was received from the coast instructing a representative here to cancel all quotations for boots, and await further instructions, as South African sole leather had advanced 60 per cent. and green chrome leather for uppers 20 to 30 per cent., and all other grades correspondingly increased. Considering the importance of this information, two other representative houses were called upon, and this practically was confirmed. One manager remarked that it had better be said the price of leather had advanced 6d. to 8d. a lb. The other day there was a cable saying that Australia had accepted an order for 100,000 pairs of boots for a London firm. Similar orders were offered to South African makers, but were declined as at present they are fully employed supplying local demands. Fortunately we are in the happy position to supply much of our ordinary requirements, perhaps not boots of the higher grade, but we are certainly making very serviceable articles in boot gear. A local tannery states that the price of local hides has gone up owing to the South African demand, and what is more, the demand for export purposes. These conditions, unfortunately, prevail throughout the world, and to all appearance they look as if they will become more acute for many months to come, as the Continent of Europe is said to be destitute of leather for all purposes.

OILS, COLOURS AND GLASS.

Linseed oil is extra firm at 90s. per case of 2-4's of the Indian kind, and 65s. per 4-gallon drum of British. Turps are 72s. 6d. for 2-4s and 85s. for 10-1s, the latter being scarce. White lead, Canadian and American, 75s., and genuine British 90s. per 100 lbs. All these quotations are from merchant to retailer. A shipment of calcite distemper has just arrived at the coast, and the price will be, on arrival here, 5s. per 7lbs. Best American salad oil, 140s.; South American varcelona, 120s.; South African nut. 80s. per case of 2-4s. There is a further rise in South African nut oil on account of the dearth and scarcity of nuts through using so many here and the demand for export. Olive oil is still very firm; Spanish, 27s. 6d. per gal., but a shipment of the best is expected from France which should ease matters slightly. Indian castor oil is higher at 110s. per case of the medicinal quality: ordinary, 85s. and mineral, for miners, 45s. Motor spirits are a fraction easier, both in price and quantity as two shipments have arrived, one from America and the other from Sumatra. Local grease is the same, £27½ to £32½ per ton, but is very firm on account of the price of raw material. This, however, is one of the local industries that has come to stay, and, thanks to the competition amongst makers, the price will be kept about right. There is plenty of glass for the time being and business is good, especially for the country trade. The town trade is not so good in mirrors on account of the furniture and picture-frame makers' strike in Johannesburg. But at the coast there are plenty of mirror-makers and prices are more reasonable than here. The quotation of British plate is 6s. 6d.; mirrors, 8s., and window glass of 16oz 1s. 6d.; 21oz., 1s. 9d. to 2s.; and 26oz., 2s. 6d. per foot.

IRON, STEEL AND MACHINERY.

Business in both imported and local made iron is good from all parts of the country, and in addition a few more mine orders have come out. Prices are nominally the same, viz., 35s. to 40s. per 100 lbs. for small sizes of imported of flats and rounds, and local 30s. Dunsward and 35 Vereeniging mild steel. It appears that the imported article is on the big side, as quantities keep arriving here without a corresponding demand. As for example a new Canadian line has been started, leaving Montreal monthly for the Cape, the first boat being due to arrive at the Cape any day. This means direct transport from the manufacturers to the Cape, and as America is doing likewise, the competition for mining material from that quarter will undoubtedly be severe. Already cable instructions have been sent to Britain to cancel orders, as there is no chance to purchase there, especially since the last coal strike and the rise of 6s. per ton for coal, which represents about 10 per cent. on the cost of iron and steel. There are excellent enquiries for second-hand tram rails and trucks, also for engines and boilers of all kinds. As regards boilers they are getting very scarce indeed, and the demand is increasing, as the idea has gained ground that there will be nothing or very little coming from the lower-grade mines shutting down. The interim report in this connection is said to be quite as hopeful and satisfactory as expected.

TIMBER AND BUILDING MATERIALS.

There is a great shortage of cement through, it is alleged, a breakdown of machinery. The building trade is excellent and continues to expand, as people have taken the bit between their teeth and going right ahead again, as they recognise that prices for materials or labour will not come down for a very long time to come. The world is so short of houses, and now that half the returned soldiers have brought wives with them, the house shortage position is getting worse and worse, therefore it is not surprising that building is going on apace as circumstances permit.

SECOND-HAND TIMBER AND IRON

Iron, which has been eagerly looked forward to by merchants for over a fortnight, has not yet arrived, but is expected daily. There is a big demand for second-hand iron which cannot be dealt with, as there is practically none in town. The nominal price for new is about 1s. 4d. Of timber, both new and second-hand, there are fairly plentiful stocks;

the price of new is 1s. 7d. and second-hand 1s. 2d. Orders are numerous and good business is confidently expected as soon as supplies of iron come to hand.

BRICKS, ETC.

The demand for bricks is such that it is impossible to cope with it to-day. Labour is on the scarce side. An all-round advance has occurred in cartage of sand, concrete stone, etc., owing to the increased price of fodder, repairs, wear and tear, etc. Stock bricks are 65s. a thousand, wire-cut 85s. to 90s., pressed bricks 80s. to 90s., delivered in Johannesburg.

HUME PIPES.

The Hume Pipe Company has started another department in connection with the manufacturing of concrete articles by the Hume centrifugal process. Circular tanks for holding rain water, slop water or other purposes are now being manufactured in large quantities in sizes from 2ft. to 6ft. diameter and in height from 1ft. to 8ft. These tanks are very much cheaper than galvanised iron tanks and of course are indestructible. In another department the company are building concrete silos. These are being in 8ft. lengths, and can be made 40 to 50 feet high without trouble. Another novel adaptation of concrete pipes is in the use of them for smoke stacks. A smoke stack 60ft. high by 24 inches diameter is now in daily use at the factory, Germiston. The Ladysmith pipe length for 250 lbs. pressure per square inch has been completed and taken over by the Municipality. This, so far as is known, is the highest pressure known to have been carried in concrete pipes. The line is working perfectly satisfactorily, there has not been the slightest leakage in the entire length. Contracts are at the moment being executed for a large quantity of culverts 4ft. 6in. diameter. From information received from Australia by the last mail, pipes are being made there of 12 feet diameter, and a considerable number of photographs showing pipes from 4ft. to 8ft. diameter have been received and will be reproduced shortly.

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JOHANNESBURG.

ENGINEERING SECTION.

THE KALAHARI PROBLEM.—III.

Irrigation of the Otyo Plateau from the Cunene River—The Okavango, Kwito, Kuando and Part of the Zambesi Rivers for the Kalahari.

[By AUGUST KARLSEN.]

THE error of Professor Schwarz is that he has greatly overestimated the capacity of the flow of the rivers and entirely underestimated the evaporation. It is the A.B.C. of irrigation to try to store the water in a deep basin of small area. For this reason Lake Tsana was at last temporarily abandoned as a reservoir for the Blue Nile. Such great lakes as Etosha Pan and Makarikari are entirely unsuitable for any storage of water. It is therefore in the highlands of Angola and of North Rhodesia where we must search for the reservoir sites in which the floods can be stored, at least as much as possible, and thereby equalise the flow of the rivers over the whole year. This is, of course a much greater problem than that thought of by Professor Schwarz, but it is the only sound way to undertake the irrigation scheme. No doubt a dam has to be built on the Cunene at the small cataracts to bring the water up as high as possible. The Oshana Ovale may be canalised, and for a continuous small flow the face does not need to be so considerable. The canal may even have to be concreted. The water from this Cunene reservoir must evidently be pumped into this canal, which should end at the S.W. corner of Etosha pan, following its western border. The canal will have a length of 180 miles. From this point, of a level of 3,445 feet, the water will be pumped to Otyo, 4,100 feet, and to Otave, 4,460 feet, irrigating both sides of Ugab River over a length of 120 miles and an area of 2,500 square miles. The distance from the two branches of pipes will be 180 miles. With reinforced concrete pipes and relays there is nothing impossible in this proposal. In this great country, where the white population must be increased at any price, not by a few thousands but by at least 200,000, such great technical problems are unavoidable. Part of the water will, of course, be reserved along the Oshanas for the Ovambos, but with the rainfall varying from 11 to 37 inches, "dry farming" and mechanical means of agriculture will assure an immensely greater cultivation than any irrigation can supply. It need only be necessary to teach the Ovambos these methods in order to render famines unknown. Of the probable average run-off of the Cunene of 430,000 million cubic feet, one-third, or 140,000 million cubic feet, can be employed for the irrigation of this high-veld area, which, at two feet irrigation, represent 1,600,000 acres. At 40 acres per farm and five persons for each farm, this will give room for 200,000 inhabitants living by agriculture, all placed on a healthy area at a level of 4,000 to 4,500 feet. Storage is possible in the Ugab River, so that during the flood season water can be pumped in excess for the winter months. We have to pump 4,440 cubic feet average per second to a total average height of 900 feet, which represents 500,000 h.p. We need 16 pipes of 6.5 feet diameter for the average flow or 1,440 miles, which will cost £10,000,000. The 500,000 h.p. will also cost £10,000,000; total, £20,000,000, or, per acre of irrigated land, £12 10s. To this must be added the ordinary expense of storage, canals and distribution, or in all £20 per acre. This is still less than the small irrigation schemes of the Union. The power will be supplied by the Cunene River. The fall on 200 miles to the sea from the dam at the small cataract will be 3,100 feet. On the Portuguese side several high ranges approach the river very closely, and power canals can certainly be constructed without any great difficulty to supply three large power stations

with a total fall of at least 2,500 feet. To be able to generate with this fall, included transmission, 500,000 h.p. we need 3,000 cubic feet per second; in all for pumping and irrigation 7,440 cubic feet out of a total average flow of 13,600 cubic feet. There is thus an ample reserve for evaporation, for the Ovambos, for Angola and for manufacture of cheap fertilisers, which would enable this new population to pay amply for the expense of irrigation. The sum is great, but it is productive capital and the whole of South-West Africa does not offer any other opportunity except some very small schemes, on the Great Fish River principally, where three reservoirs containing 15,000 million cubic feet for 6,000 inhabitants had been projected. In a country where there is only 13,000 white men and 13,000 acres of European cultivated land, 6,000 new inhabitants and 40,000 acres are an appreciable addition, but this is still a drop in the ocean, and this pumping scheme from the Cunene can alone solve the problem. The Union, in taking over South-West Africa, must know the responsibility and the obligations which they have assumed, and this scheme, although in some way grandiose, must be included in the programme for the immediate development of this country. The expense can be distributed over a great number of years, and with an initial capital of £5,000,000 and cheap fertilisers, the scheme will supply its own capital for its extension.

THE IRRIGATION OF THE KALAHARI.

For the irrigation of the Kalahari our resources of water from Okavango, Kwito, Kuando (Chobe), and even Zambesi, will be much greater than from the Cunene. Although at a level of 3,000 feet the whole country will be healthy as soon as the swamps are drained out and when the white population will live in entirely separate areas from the natives. Water can be taken away from Zambesi and from Rhodesia without inconvenience. The healthy high-level area in South Rhodesia is not greater than the O.F.S., so it is not there in this more tropical area that we might expect the great white population required to be settled. But for the irrigation of the Kalahari we have no great hydraulic

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power to dispose of for the pumping of the water to a higher level except Victoria Falls, of which a small portion could be employed for this purpose. Professor Schwarz's theory is that either the Okavango or the affluent to the Makarikari, the Letyaho River, continued south to Lehututu and Malopo. Considering the levels along the South-West African border, this is evidently an error. Lake N'Gami is at the level of 3,117 feet, and this is probably the lowest point of the ancient lake which had an overflow to the Malopo. This overflow was most probably on the general watershed from the Rand to Ottoshoop, Pitsani and across the Kalahari to Gobabis and Okahandja. This overflow must have been at a level of at least 3,150 feet, and in the whole Kalahari scheme, this level is the first to be ascertained by precise levelling from Potchefstroom over Mafeking and Pitsani right to Okahandja and Walvisbay, the railway levels being no guarantee whatever. The distance from Mafeking to Okahandja is 634 miles. If the level of Andara of 3,478 feet is exact, a canal leaving Andara, after the construction of a weir on Popa Falls, will reach this watershed at a level of 3,296 feet, but this canal must be flumed by Breala bitumen sheets and concrete. Otherwise the section of the canal would be too great and the loss by infiltration and evaporation enormous. From this watershed the canal may continue to Lehututu and Malopo, a distance of 640 miles from Andara, and the best alluvial land can be selected for irrigation. Branch canals would lead in to the reserves of the Bakawenas and Bangweketsis, but a whole redistribution of the native reserves must, of course, be undertaken, and this makes it so necessary that the study of the whole scheme is undertaken at once. Depending on the storage which may be possible in Angola, and at Capulo, 3,840 feet, where five great rivers meet, a large reservoir seems to be possible, this supply could supply irrigation for 4,340,000 acres. At 35 acres per farm, this would give room for 620,000 inhabitants. The Okavango canal, being the principal for the irrigation of the Kalahari at the highest level possible, the

River Luina an affluent of Kuando, can be brought down to Andara from a reservoir at Lat. 17° S., where five big rivers meet. This canal would have a length of 70 miles and the levels seem to permit it. From the Kuando River one canal must start 40 miles above the boundary of the Caprivi Belt. To this point one canal could be led from a reservoir in the Zambesi at Gonye Falls, 90 miles, and the origin of the canal would be at a level of approximately 3,350 feet. This canal will cross the Selinda River, divide in two 40 miles north of the junction of the Botletle and Tamelekane. The south branch will pass through Tsaw and west of N'Gami, to Anderson's Vlei, thereafter east to Makarikari. It is not probable that this canal could pass the watershed to the south Kalari, but this part between the Botletle and the watershed is all fertile land and perfectly suitable for the white population. The second branch will irrigate the land north of Botletle, right to Makarikari. A third canal can start at any suitable point above the Chobe Lake for irrigation of the land nearer to the Chobe and to the Rhodesian border. All the country north of Botletle will be reserved for the native tribes. The three canals could easily irrigate 4,000,000 acres, of which at least 1,000,000 for the natives. The three canals will meet at Makarikari and the Botletle will add the surplus from the Okavango. From the meeting point the water will be pumped to a high-level canal of 4,000 feet, running along the Rhodesian Railway. The Victoria Falls is only at a distance of 200 miles. Victoria Falls can be supplemented by other large power supplies of Rhodesia, if we are not afraid to construct power canals of some length to collect the fall. We must abandon the conception that hydraulic power is obtained for nothing. This high-level canal would pass partly through Khamas Country, and they are the principal people of Bechuanaland. This canal is calculated to supply 860,000 acres with 124,000 inhabitants. In all 8,200,000 acres with 1,170,000 Europeans and 1,600,000 acres with 1,600,000 natives. Together 15,300 square miles, or 5.5 per cent. of the whole Bechuanaland. In Egypt 7,000,000 acres of land are cultivated with a total population of 12,600,000 inhabitants. But Egypt is fertilised by the Nile, at least to a certain extent. The Kalahari will be fertilised by the cattle feeding on the grazing land of the so-called desert and by the Victoria Falls manufacturing the cheap fertilisers required. Without intensive crops, produced by cheap fertilisers, the farmer cannot derive a sufficient revenue from 35 acres of land to pay the irrigation. The power of the Victoria Falls can be increased by storage and regulation of the Zambesi to 1,000,000 h.p. in the wet season, a great part of the additional power being used for pumping to the high-level canal. The initial cost of the Kalahari scheme, including Victoria Falls, is estimated to be £15,000,000, and with this sum and cheap fertilisers it will pay its own extension in 25 to 30 years, provided that sufficient suitable immigrants of all nations can be found to people the area.

A SOUTH AFRICAN EGYPT.

This is a short resumé of this gigantic scheme of Egypt in South Africa, which would be the greatest scheme of the world, much greater, even, than the great irrigation works of the United States, the Argentine and Australia, and of greater importance to South Africa than, for example, the lowering of the Zuyderzee will be to Holland, where, with an expense of £16,000,000, 180,000 acres of fertile land, or 6½ per cent. of the whole country, with room for 160,000 inhabitants and with an estimated crop value of £6,000,000, will be added to the State. These figures prove that it is nowhere possible to do land settlement on the cheap. To be able to understand the importance of the irrigation of the Kalahari by means of the Angola Rivers and the Zambesi, it must be mentioned that all that the irrigation by the high-veld rivers of the Union can possibly do, even with the storage of the exceptional floods, is 200,000 inhabitants, if allowance shall be made for industry and town water supply. But this means the entire abandonment of the Government small storage policy. As the native population of the Union increases in proportion much more rapidly than the Europeans, the population would be, in 1946, 2,600,000 Europeans and 10,650,000 natives and coloured, with a native and coloured majority of 8,000,000. For 1918 the

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corresponding figures were 1,473,000 Europeans and 5,530,000 natives and coloured, with a native and coloured majority of 1,059,000. Means must therefore be found to increase the European population by any means, and the most powerful of these means is irrigation. If we can add in the Union 200,000, in S.-W. Africa 200,000, and in Kalahari 1,200,000, the industrial expansion of the Union will absorb an equal number and the European population could be 6,000,000 and almost be equal to the native population. Without immigration, where would the United States be to-day? Instead of 8.11 whites to one coloured there would be only 1.23 white to one coloured, and in some Southern States there would be a coloured majority. We should, with such a white population, be able to absorb also the whole of Rhodesia, and the advantage thereof would be that additional room is found for the natives, for whom the reserved parts of the Union will be too small. With these facts in mind, money must be found for this gigantic undertaking, the partisans of the dead loss evaporation will understand that South Africa cannot afford to lose this water. We shall get more rain out by intense cultivation of the land than by these small lakes. The hydrographic and technical studies of the Kalahari, Angola Rivers, and the Zambesi will absorb for 10 years at least all the young engineers that the South African Universities can produce, and Ministers will not be obliged to confess in Parliament that there is no employment for them in South Africa. The industrial expansion following will thereafter be sufficient for the employment of every intelligent man in the country. It is these facts that Professor Schwarz has overlooked in putting his scheme forward, and the writer hopes that by the great publicity given amongst technical and industrial men by the *S.A. Mining and Engineering Journal* everybody will do his best to promote this scheme further by an active propaganda amongst his fellow citizens. The matter is extremely urgent. Angola, which will be to South Africa what Abyssinia has been to Egypt for 7,000 years, was on the point of falling into German hands by the Lichnowsky Treaty. At present the Italians wish to replace the Germans and undertake the industrial expansion of this rich province. South African interests there must be safeguarded and, as here above explained, these interests are enormous. Further, the regulation of the Zambesi and of Victoria Falls are very urgent matters, and Victoria Falls and other Rhodesian power supplies must be prevented from falling into the hands of monopolies. The floods of the lower Zambesi have caused yearly enormous damages, and the investigation of the whole Zambesi problem is a most urgent question. It is a disgrace to South Africa that this was not done already from 1902. The progress of the country made by the irrigation of the Kalahari, together with the national fertiliser and iron industry, might have been such that already a political unity would have existed and the mining industry would not have experienced the severe crisis of which the consequences may be disastrous. The necessary addition to the Kalahari scheme, the Cape-Gibraltar-London electrical broadgauge railway will be examined in a fourth and final article.

Cam & Motor Reconstruction.

The Cam & Motor Gold Mining Company (1919), Ltd., was registered in London on 17th July with a capital of £617,500, in £1 shares. The company is to acquire certain mining claims in the Hartley district, Southern Rhodesia; to enter into an agreement with the Cam & Motor Gold Mining Company, Ltd., and its liquidator, and to carry on the business of miners, metallurgists, concessionaires, etc. Minimum cash subscription, 25 per cent. of the shares in the company. The first directors are: Sir Abe Bailey, Muizenberg, South Africa; B. Southwell, Box 50, Johannesburg; I. E. B. Homan, The Carons, Mitcham; I. Lewis, 34 Bishopsgate, London, E.C.; G. S. Fort, 11 Radnor Place, London, S.W. Qualification, £250. Remuneration, £200 each per annum (£100 extra for the chairman). The directors are also to receive 5 per cent. of the profits of each year remaining after 10 per cent. has been paid on the shares (such extra payment not to exceed £500 per annum to each director). Registered office, Palmerston House, Old Broad Street, London, E.C.

Modder West Mine.

The Manager of the Modder West reports that he has now struck the outcrop of the reef at 150 feet west of the main shaft. The reef is about 60 inches wide and on panning he estimates it is carrying 20 dwts. to the ton. The assays will be returned in a few days. The 10-stamp mill is now in course of erection, and it is expected to be crushing at the end of next month. The new directorate is composed of Mr. T. F. Allen, O.B.E., Mr. P. J. Faure, M.P.C., Mr. H. W. Sampson, M.L.A., and Mr. Rufe Naylor.

Municipal Council of Johannesburg.

Vacant Position of General Manager of the Gas and Electric Supply Department.

Applications are invited for the position of General Manager of the Gas and Electric Supply Department.

The duties and responsibilities of the position are as follows:—

Chief Engineer and Business Manager of the Council's Gas Department and the Electric Supply Department.

Chief Engineer of the Tramways Department.

Consulting Electrical Engineer for all departments of the Council.

Supervision of repairs and maintenance of any of the Council's plant in other departments when required to do so (excluding mechanical work of the Town Engineer's Department).

Technical supervision of the engineering plant at the Town Hall and Municipal Offices.

Adviser (in conjunction with the Town Engineer) on locomotion matters connected with any department of the Council's service.

The position is graded £1,250-£1,500 per annum. The Council will use its discretion regarding the commencing salary; but in any case it will not exceed £1,500 per annum on monthly engagement. An allowance of £22 10s. per month is also provided for a motor car.

Applicants must state full name, address, age, present employment, qualifications and previous experience, whether married or single, and should give proof of fitness for the position such as is recognised by full membership of the Institution of Mechanical Engineers (London), or the Institution of Electrical Engineers (London), or both. The possession of the Union Government Mechanical and Electrical Engineers' Certificates of competency will also be a recommendation.

The successful candidate will be required to pass a Medical Examination of fitness.

Copies of not more than three recent testimonials should be enclosed with the application, which must be addressed to the Town Clerk, Municipal Offices, Johannesburg, and received by him not later than 12 noon on 1st September, 1919.

Attention is drawn to Standing Order No. 135, which reads as follows:—"Personal canvassing for appointments in the gift of the Council is strictly prohibited. Proof thereof shall disqualify a candidate for appointment."

D. B. PATTISON,

Town Clerk.

No. 259—16th August, 1919.

Company Meetings.

HENDERSON'S TRANSVAAL ESTATES, LTD.

The seventh ordinary general meeting of this company was held at River Plate House, Finsbury Circus, London, E.C., on Thursday, July 10, 1919. The Right Hon. the Lord Oranmore and Browne, K.P. (chairman of the company) presided.

The Chairman, in moving the adoption of the report and accounts, said the issued capital was practically the same as last year, a few options having been exercised and fractions converted. The first figure on the debit side of the balance sheet was increased by £2,305, principally due to payment of calls. The calls outstanding now amounted to £76 2s. 6d., as against £2,301 10s. 6d. last year. The reserve account amounted to £30,000, being increased by £20,000, in accordance with the directors' recommendations last year. They now recommended the shareholders to place a further £10,000 to this account, making a total of £40,000. Stocks and shares were increased by £2,865, the sum of £577,225 representing the company's holding in the Henderson Consolidated Corporation, Ltd., Daggafontein Mines, Ltd., the Cement Co., Tweefontein Colliery, Ltd., Tweefontein United Collieries, Ltd., Delagoa Bay Development Corporation, Ltd., and a small number of other miscellaneous holdings, the majority of which were dividend payers. The London expenditure had been reduced by £2,056. Last year it was higher by nearly this sum, in consequence of the

expenditure due to the liquidation costs of the Daggafontein Gold Mining Company, Ltd. The Johannesburg expenditure was increased by £1,085, but this was accounted for by increased taxation at Klipfontein and a contribution to the Governor-General's War Fund. On the year's working there was a profit of £49,002, as against £60,964 last year, but he pointed out that last year £46,005 of the profit was from sale of shares, while this year only £28,569 was derived from this source. On the other hand, they received £23,947 from dividends and interest, as against £21,774 last year. This fact pointed to progress in the right direction, as it was to income of this nature that the directors looked for the funds necessary to pay dividends. After allowing for the amount required to pay the 6 per cent., which they recommended, and the transfer of £10,000 to reserve, they would carry forward £43,484, and he thought that, in view of this, and taking into consideration the very strong cash position, they might again congratulate themselves on the result of the year's working. The payment of a dividend, although small, for the year 1918, by the Henderson Consolidated Corporation, Ltd., was a welcome indication of progress, and the declaration of 2 per cent. for the current year furnished ground for the hope that an annual distribution by the Corporation might be anticipated. It was through their shareholding in the Henderson Consolidated Corporation, Ltd., and the Tweefontein Colliery, Ltd., that they

received the profits from the coal properties on which they greatly relied for their annual income, and on the success of which their future prosperity mainly depended. The directors had frankly told the shareholders in the report what was the present position, but he wished them clearly to understand that while they had thought it right to insert a note of caution, they did not wish shareholders to infer that they were pessimistic as to the ultimate outcome of the development of their coal interests. The causes of the failure of the output of the mines to come up to the maximum anticipated had nothing to do with the mines or their equipment. The epidemic of influenza which visited South Africa with such severity was, in a great measure to blame, and would be responsible for a diminution of the output during the current year. But there were three other factors which were still present, and which were also attributable causes to reduction of output. These were the labour unrest, which seemed as prevalent in the sub-continent as in the rest of the world, railway rates and shortage of trucks, for which the Government, and not the miners, were to blame. The sales of surface rights had again been satisfactory, amounting to 33,210 acres, and the prices were slightly higher than last year. They had had several enquiries during the current year, and the Henderson Consolidated Corporation, Ltd., had already succeeded in dealing with four properties at good prices.

Brighton on the Orange River.

In a recent speech at Upington, Mr. J. P. Coetzee, M.L.A., dwelled on the irrigation development which is now in progress on the Orange River, particularly in connection with the large conservation dam, known as the Cannon Island weir, which the Government is constructing. Some details in regard to this scheme may be of interest. Reuter's Upington correspondent writes: The site is about 18 miles below the town of Upington. At this point the river is divided into six channels. The distance between the two outside main channels is two miles, and between these lies a large tree-covered island, known locally as Cannon Island. This spit of land is nearly ten miles in length, and is composed of alluvial deposit, which the erosion of the river has left for the most part high and dry. The weir is being built in six sections, one for each channel of the river. On the south of Kenhardt bank of the river the protection works are now complete, and work is being pushed forward from midstream to the north bank. The river has been diverted from this channel into the main north channel by means of a temporary dam, so that on a recent visit we crossed this channel, which is 1,000 feet wide, dry-shod. It was an interesting sight to watch the trolleys bringing huge blocks of granite from the quarry on a miniature railway, which crosses the river. Several cranes are installed to lift these blocks—some of them weighing two tons—and place them in position in the weir. Over the second section of the weir is a suspension bridge—one of four to be built—the roadway being 20 feet above the water. The cables from which the bridge is suspended are carried by concrete trestles 30 feet high. A tramway is laid over the bridge, and on this is carried all the cement, lime, and sand used in building the weirs further on. Sections 2, 3, and 4 are almost complete, and the work is being pushed on at the remaining sections, 5 and 6.

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Notes and News.

The Death of General Botha.

It is with deep regret that we have to announce the death of the Right Hon. General Louis Botha, P.C., Prime Minister of the Union of South Africa, which occurred at 12 o'clock on Wednesday night at his Pretoria residence from heart failure. Mrs. Botha and the General's son, Captain Louis Botha, M.C., were with the General at the time of his death. It is but a few days ago that, while on a visit to his farm Rusthof, in the Standerton district, the General contracted a chill which had affected the throat. On his return to Pretoria on Monday last, General Botha complained of the condition of his throat and suffered also from a high temperature. His passing is a heavy loss to South Africa and the Empire. The sympathy of the Chamber of Mines was expressed in the following telegrams, sent from Sir Evelyn Wallers, president, Chamber of Mines, to Mrs. Louis Botha, at Pretoria: "On behalf of the members of the Chamber of Mines, I wish to convey to you and the members of your family our deep sympathy with you in the loss you and the country have sustained by the death of your greatly esteemed husband, General Louis Botha, who, with such distinction and so faithfully, has served South Africa and the Empire." The following telegram was sent from Sir Evelyn Wallers, president, Chamber of Mines, to His Excellency the Governor-General, Government House, Pretoria: "On behalf of the members of the Chamber of Mines, I beg to convey to Your Excellency the expression of our sincere and personal regret at the loss the country has sustained in the death of the Prime Minister, General the Right Hon. Louis Botha, who has with such distinction and so faithfully served South Africa and the Empire."

* * * *

Solomon Syndicate.

At the statutory meeting of the Solomon Syndicate, Ltd. held at Pretoria last Saturday, the Chairman (Mr. J. de V. de Beer) said all the shares offered (2,500) by the prospectus were applied for, and were allotted. The whole of the money due in respect of them had been paid to the syndicate, and after paying brokerage or commission provided the syndicate with £2,500. The cash part of the consideration due to the vendors (£1,000) had been paid, and the vendors' shares had been allotted to them. With reference to these vendors' shares the articles of association of the syndicate provided that no transfer could be registered for a year. Arrangements had been made for Mr. E. M. Weston, consulting engineer and geologist, to visit and report on the syndicate's property. He would leave for Namaqualand for this purpose within a week. Messrs. E. H. Solomon and E. J. Sivewright were elected members of the board of directors, in addition to the three existing directors, Mr. J. de V. de Beer (chairman), Mr. A. C. Romayn, and Sir Johannes van Boeschoeten.

* * * *

Union Loan to Attract Small Investors.

It is understood that on or about September 22 the Union Treasury will issue new securities, which will be known as "Union Loan Certificates." These will be on sale at all money order offices throughout the Union. They will be purchasable at 15s. 6d., and may be cashed at any time. During the first year of currency no addition to the purchase price will be made. At the end of 12 months the certificate may be cashed for 15s. 9d., and thereafter its cash value will increase by a penny a month until, at the end of five years, it becomes worth 20s. Thus at the end of five years 15s. 6d. will have earned a little over 5 per cent. compound

interest. The interest earnings will be free of Union income tax and super-tax. No person will be permitted to hold more than 500 £1 certificates, which will not be transferable or negotiable. The object of the loan is to give State encouragement to thrift and to raise money for capital expenditure by appealing to the class of investor whose needs have not been met by any previous issue of loan stock. At the end of five years, the sum invested, together with the accumulated interest, will be returned. It is confidently expected that this loan will prove extremely popular and will appeal especially to the small investor.

Cold Coast Diamonds.

Considerable prominence has been given this week (remarked the *London Mining Journal* of July 19) to reports of a discovery of diamonds in the Gold Coast Colony, and to the shares of companies considered to be possibly interested. The discovery is interesting, as an authenticated discovery of this precious stone, particularly with present prices, must always be. Whether, however, it is of serious importance to the diamond market and to the control is a matter which cannot be determined for a considerable time to come. The discovery was made in a district to the north-west of Kibbi. The discovery is particularly interesting from the fact that it is the direct outcome of the geological survey instituted by the Colonial Office, which has done such valuable work in locating manganese, bauxite, and limestone deposits of importance in the Colony. The diamonds themselves are alluvial, and occur in what has apparently been an old river formation. As regards mining rights in the Colony, many readers who may have been interested in the "jungle" will remember that the Concessions Ordinance was introduced to prevent natives parting with their land to claim-hunters without the officials being satisfied both as to their interests being properly protected and also that a clear title was being conveyed.

Jackhammers.

"In common with other centres, the jackhammer type of machine drill has been tried on the mines of the Far East Rand district during the year with varying success," writes Colonel Bottomley, in his last annual report. "The need for some type of light, one-man machine was urgently felt by reason of the general scarcity of native labour. Generally speaking, the machines have effected a considerable saving as against any other type of machine when compared with hammer boys. This applies more particularly in the case of steep mines, where the effort of maintaining the machine in the desired direction is less pronounced than in flatter mines, and where the aid of gravity is brought into operation in connection with the removal of broken rock. It may be stated that efficiency decreases in direct proportion with the flattening of the reef bodies worked. In no case, however, has it been proved possible to work the machine as a "one-man" drill. Compared with hand stopping, the use of these machines at the East Rand Proprietary Mines, with a steep dip, effects a saving of 35 per cent. in labour, while the cost per fathom works out at slightly more than with hand stopping. On so-called flat mines, where, however, there is generally a slight dip, the Modderfontein Deep Levels may be taken as a good example of what can be effected with these machines. Here the drills are arranged in sets of four, with a complement of twelve natives in the operating gang. The machines are rigged on a light bar with arm and cradle, and each machine manages with two or three rigs per shift ten holes, with depth 3½ feet, making a total footage drilled of 140 feet. The machines have an efficiency of .80 as against 1.10 fathoms gained by Leyners. In vertical shaft sinking the jackhammer type has proved an undoubted success. The usual type supplied is generally found to be too light, and the extra hose required to feed direct into the hole and not through the steel is also objected to. This has led in some cases to the conversion of the Leyner type into an improved jack by the provision of a handle to facilitate its use without the usual cumbersome bar or tripod. At the Daggafontein shaft this has been done, and the present sinking operations are performed with a saving of 55 per cent. in labour."

Natal Coal.

Dealing with the Natal coal trade, Mr. J. E. Vaughan, in his last annual report, says: "There was again a considerable decrease in the output of coal. In 1918, 2,607,133 tons were produced, as compared with 2,890,296 tons in 1917, and 3,066,261 tons in 1916. The reason for this decrease are not far to seek; in the early months of the year many of the collieries were partially flooded, owing to the abnormally heavy rains of the 1917-1918 wet season. The mine water in Natal is very acid indeed, pumps broke down, and could not be replaced owing to the war, so that throughout the year several of the collieries were continually handicapped by water troubles. Throughout the year there was a general complaint of shortage of trucks, which was no doubt due to the difficulty of repairing trucks and engines owing to a dearth of skilled labour and the want of the necessary repairing materials. In the latter months of the year the Spanish influenza absolutely disorganized work on the majority of the collieries, many natives died of the disease, and the majority contracted it, so that for at least a month very little coal could be produced; this, added to a general shortage of native labour throughout the year, contributed very materially to the poor output. Shipping was very irregular, and this again upset the regular working of the mines. Considering all the difficulties they had to contend with, the mines did very well to produce the amount of coal they did. The price of coal continued to rise, the average price at the pit's mouth for the year being 10s. 5.10d. per ton, as compared with 7s. 4.77d. in 1916, and 6s. 1.83d. in 1913. Possibly conditions will improve in the coming year, but a lot depends upon the time when shipping conditions will become normal, and also upon the routes some of the lines now coaling at Durban may adopt in the near future. I anticipate an increase in the production of coal in 1919, but I do not think it will reach the present record output of 1913."

Recovery from Abandoned Mill Sites.

At the present time two of the old mill sites of the East Rand Proprietary Mines are being systematically cleaned up with a view to recovery of gold and amalgam which, in the course of many years' working, are known to escape recovery and accumulate during the working of the mill, writes Colonel Bottomley in his last annual report. The two sites are those of the Driefontein and the Comet mills, which have ceased working owing to centralization of crushing at the Cason and Angelo. The area covered by salvage operations is that around and beneath the mill and ground launders, and particularly on those positions where detritus or waste of any kind from the mill has in the past been deposited. The location of these deposits is by prospecting, and continuous use of the prospecting pan. Although the mill was thoroughly cleaned up and launders destroyed and searched before the mill staff handed over the site, is is astonishing what a considerable amount of gold is being recovered, and from what impossible looking materials. On locating a likely spot, the ground and rubbish is collected and trammed or barrowed to the sluices, where the coarse rubbish is separated from the fines on the sluice boxes, and the product, together with other waste, such as blanketings, etc., is heaped up and burnt. The gold is thus set free and collected in further sluicing operations. The methods of recovery follow closely those of the old Australian diggers, the sluices being approximately 100 feet long, set at an angle of approximately 15 degrees, the first lengths of sluices having a removable grid overlying canvas strakes. The grid is made of thin metal plates set one inch apart at an angle of 45 degrees against the flow. The blanketings are further concentrated, and resulting product being further panned off and treated in an ordinary amalgamating barrel with mercury. Taking the Driefontein site, which is the furthest advanced, it is estimated that since the mill started crushing in 1897 a total of 4,700,000 tons has been treated. The present clean-up has already yielded 2870 ozs. of fine gold. The work is being done by a syndicate on a percentage under the direction of Mr. Richards, of Treasury and Jumpers fame, who is one of the syndicate.

TOPICS OF THE WEEK.

THE G.M.E.'S ANNUAL REPORT.

THE annual report of the Government Mining Engineer, issued this week, is packed with facts and figures of importance. It is, of course, impossible to do justice to them all in one issue, but a few of the salient features may here be noted. The percentage of coloured labourers at work on gold mines in the Transvaal during 1918, as compared with those in service, was 95.1 per cent., against 95.8 per cent. for the preceding year. Sickness and, in the case of newly arrived natives, physical unfitness owing to change of climatic conditions, are the chief factors affecting this percentage. In the case of white labour, the number at work is 6.8 per cent. less than that in service, as against 4.5 in 1917, the increase being due to some extent to the influenza epidemic, but chiefly to the extension of the system of granting leave on full pay. In his annual report for the twelve months ended 31st July, 1918, the Chairman of the Miners' Phthisis Medical Bureau reports that 15,066 "working miners" were examined during those twelve months, while for the same period the average number of white underground workers on scheduled mines was 11,586. Witwatersrand gold mines employed 97.4 per cent. of the total average number of whites and 96 per cent. of the total average number of coloured employed in gold mines in the Transvaal. £18,617,306 were expended by mines in salaries and wages in the Union for the year 1918. The expenditure for 1917 was £18,178,963. Of this amount the gold mining industry accounts for £14,537,493, or 78.1 per cent., against £14,221,841 for 1917; the diamond mining industry accounts for £1,848,895, or 9.9 per cent., against £1,658,800 for 1917; the coal mining industry accounts for £1,112,786, or 7.6 per cent., against £1,283,871 for 1917; the base mineral mining industry accounts for £461,092, or 2.5 per cent., against £496,346 for 1917. Excluding staff, foremen and other monthly paid men, also certain contractors whose earnings cannot be ascertained, apprentices of the Government Miners' Training School and sundry unclassified men, there were on the Witwatersrand gold mines in June, 1918, approximately 9,591 miners and other underground workers receiving an average pay of 22s. 6d. per shift, and 7,220 surface men receiving an average pay of 17s. 11d. per shift, compared with 9,728 at 21s. 8d. and 7,169 at 17s. 4d. respectively for June, 1917. The average pay per shift for the combined labour was 20s. 6d. for June, 1918, and 19s. 10d. for June, 1917. During the year machinery and stores of the value of £15,267,870 were consumed by the mining industry, an increase of £344,605 on 1917. Of this amount the gold mining industry accounts for £12,983,470, or 85 per cent., against £12,701,839 for 1917; the diamond mining industry accounts for £747,142, or 4.9 per cent., against £688,801 for 1917; the coal mining industry accounts for £1,083,905, or 7.1 per cent., against £996,242 for 1917; the base mineral industry accounts for £453,353, or 3 per cent., against £533,383 in 1917. An amount of £8,704,791 was expended on South African products, including articles whereof the chief cost of production was incurred in South Africa. The compensation paid by or on behalf of mines in respect of deaths and injuries from accidents amounted to £126,626. The accident death-rate for Witwatersrand gold mines is 2.55 per 1000, showing another small improvement on the figure for the previous year, which was 2.61 per 1000, and constituting the lowest accident death-rate on record. The absolute reduction in the number killed in 1918 as against 1917 is 23.

In regard to the accident question, the Government Mining Engineer says: "Falls of ground are still the chief cause of mining accidents on the Witwatersrand, although it is satisfactory to note that there is a small decline in this special cause of accidents during the year now under review. In 1911 the death-rate from falls of ground was 1.20 per 1000, and for the next five years this rate shows a very slight decrease; 1916 and 1917 had similar rates of 1.08; and for 1918 the death-rate has been brought down to 0.91, which means that 183 persons were killed by falls of ground, compared with 220 in the previous year. While the total deaths from accident on Witwatersrand gold mines have decreased from 880 in 1911 to 515 in 1918, the deaths from falls of ground have decreased only from 258 to 183. Seven years ago the percentage of deaths due to falls of ground on the Witwatersrand was 29.32 of the total. In 1918 the percentage rose to 35.53. General statements made in this annual report of last and previous years on accidents due to falls of hanging still apply, and a large amount of attention must be given to this question by both mine and Government officials. It is possible that the following points which have now definitely become part of our mining system will in the near future assist in improving matters, viz.: The extraction of dangerous pillars under special precautions; the alteration in development systems so as not to permit of punching when pressure comes on the workings; better protection of travelling ways; systematic packing; enlargement of the scope of the Safety First Committee. No remarks upon accidents on the Witwatersrand are complete without mentioning the excellent work which is being done by the Safety First Committee of the Rand Mutual Assurance Company. This Committee has been of very great assistance in all work in connection with the prevention of accidents, spends large sums of money on work entirely connected with improvements in safety conditions, and has the best expert advice available on the fields."

Extracts from the annual report of the Secretary for Mines, Mr. Warrington Smyth, will be found in another part of this issue.

South-West Africa Co.

An ordinary general meeting of the shareholders was held on June 25 at Winchester House, Old Broad Street, E.C.1. Mr. Edmund Davis (chairman of the company) presiding. The issued capital and unclaimed dividends remain the same as at December 31, 1917, and sundry creditors and credit balances at £47,853 show an increase of £2,228, the difference being principally due to a further year's subsidy payable to the Otavi Mines and Railway Company, making the total reserve under this heading at the date of the balance sheet £35,625. Reserve against interest on investments inscribed or deposited and on bankers' balances in Germany to December 31, 1918, at £176,207 shows an increase of £13,426. There is no difference in the land sales account at £55,268. The balance of profit and loss at December 31, 1917, was £88,841, to which has been added the balance profit for the past year under review, £5,793, making a total of £94,634 to be carried to the next account. On the other side of the balance sheet there is cash at bankers and in hand, London and South-West Africa, £15,251, or a reduction of £28,332 when compared with the figure at December 31, 1917, due to increase in investments during the period under review. Cash at bankers, Berlin, on current and fixed deposit accounts at £474,590 shows no change. Investments at or under cost, inscribed or deposited in London, at £605,114, show a large increase, this figure comparing with £555,114 at December 31, 1917, or a difference of £50,000. Investments inscribed or deposited in Germany at £733,759, show no change. Debtors at £161,584 are increased by £29,255 when compared with the figure at December 31, 1917, the difference being due to a reduction of about £15,000 in debtor balances London and South-West Africa and an increase of £43,425 by way of interest on investments inscribed in Germany and on fixed deposit with bankers, which has accrued since August 1, 1914, the amount in marks being 2,883,611. The company hold 1,600,000 acres in South-West Africa.

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THE BOOM IN SILVER !

What it may Mean to this Country—Effects of Record Prices and New Methods of Recovery on our Dormant Mines.

SILVER touched a record price this week, and the fact is of interest inasmuch as it may mean the reopening of our dormant silver mines. In America silver mining has been stimulated greatly by the recent large increase in the price for the metal, and operations are being resumed at many old mines and abandoned prospects which had been closed. This metal increased in importance during the war, due to the gold and credit situation. The market was of great interest, due to violent fluctuations in price, and the firm position at the end of the year. From the Annual Bullion Letter of Samuel Montagu & Co. of London the following notes on silver are abstracted:

Early in 1917 the stability of the market was remarkable, creating confidence for the future. Subject to a slight upward inclination, prices remained about the opening quotation for the succeeding five months. By June, the market everywhere was well cleaned out of supplies, and so sensitive that it was ripe for an advance in price. In this month and July the trend was steadily upward, excepting a slight reaction on July 27. Then a remarkable advance commenced which, without a single set-back, carried the price on September 21 to 55 pence, or 1.085 dollars per ounce, the highest since March, 1878. The main factor in this extraordinary movement was the attempt of China to replace some of its currency which had been shipped abroad in large quantities during the year. China's entry into the war made the demand imperious. A spectacular fall followed this rise, due to a rumour that the United States Government might dispose of part of its silver holdings, and the demand for China ceased. On October 30 there was a record drop of threepence, or six cents, down to 43 pence, or 86 cents, about where prices remained for some time. An interesting and valuable work was published in August, 1917, entitled "Silver: Its History and Romance," written by Benjamin White, of the well-known London silver dealers, Samuel Montagu & Co. The author has been connected with the silver market all his business life, and is well fitted to discuss the metal. Four firms have dominated the market for several generations, namely: Messrs. Mocatta & Goldsmid, Samuel Montagu & Co., Pixley & Abell, and Sharps & Wilkins, all in London. The first-mentioned firm dates from 1684. The operation in London, known as "fixing" the price of silver, controls the price of the metal in every important financial centre of the world. The method is simple: First of all it is usual to ascertain if there is occasion to alter the price of the day before. If supplies are insufficient to satisfy buying orders, higher prices are suggested until offerings balance demand. As a rule, two prices are agreed upon at "fixing," one for cash delivery (7 days) at the option of the seller, and the other for delivery in two months' time. Many other factors are considered in the business. Silver brokers receive one-eighth per cent., paid by the buyer; thus only 25.6d. (60 cents) per £100 (486 dollars) separates buyer and seller. The demand during 1917 was unprecedented, both as to quantity and direction. This had a decided effect on prices. On account of Governmental control, the full natural effect was not permitted, as will be seen later in these notes. The silver market began to feel the effect of war demand in April, 1916, when the quotation of 73½ cents was made against 60½ cents, the highest in the preceding month. In May, 1916, the average price was about 74½ cents, and except for a brief period of recession in the summer of 1916, the level of prices remained nearly stationary around 75 cents per ounce until June, 1917. From average monthly price tables, it may be noted that the quotations for May, 1917, were not materially higher than those made during May, 1916. During May and June, purchases were made by London brokers for India and China, for shipment to the Pacific Coast, at sufficiently higher prices than the New York market to warrant diverting the silver production usually forwarded to London

via New York. In July a sale was made of 5,000,000 oz. to the Russian Government, for shipment to Vladivostok, and at about the same time the prospects as to Indian crops became very encouraging, both as to amount, value, and demand. The question became one of world-wide interest as to how the balance of trade in favour of India was to be paid. Under normal circumstances, the India banks were given their choice as to gold or silver. There was a certain demand for silver on the part of the Government for rupee coinage, and by the bazaars for shipment into the interior, in payment for produce, and to be hoarded by the natives. After these insistent demands for silver had been satisfied, it had been the policy for many years, on the part of the British Government, to discourage the importation of silver. This, of course, materially increased the demand for gold. The danger of these high prices to the domestic and financial condition of India was due to the fact that the silver in the rupee became of greater value than the gold redemption value of the rupee, which would naturally lead to the melting of the coins in circulation, leaving India without a currency. It became necessary, therefore, for the Indian Council to promulgate decrees making it a penal offence to melt the rupee, or to export silver. Later they forbade all importation of silver, except such as was made by the Indian Government itself. The British Government also again used its influence with the China banks to induce them to stop buying silver. Under these influences, the silver quotations declined during the last quarter of the year. The commercial situation in India, and also presumably in China, has not been met, however, but simply the amount of silver which the various governments and the arts are purchasing has been purchased at a figure less than the September maximum, and either the exportations of merchandise from India, China and Japan have been restricted, or have not been paid for. Some of this commerce is most seriously needed by the United States and the other Allies, to say nothing of the stagnation which must be the result of these governmental actions in India. Gold will not be spared by any nation, except as a last resort. The question that arises is as to where such an amount of silver can be obtained. The economist would say, doubtless, that the price of silver should be enhanced up to the point of bringing about the necessary production. One difficulty with this general rule, as applied to silver production, is that less than one-third of the production of silver is received from strictly silver mines. Considerably more than two-thirds of the silver is produced either from mines producing lead and copper, or from mines shipping their siliceous ores to lead and copper smelters. If the silver production should be stimulated from such mines, it would also very largely increase the production of lead and copper, which might possibly depress the prices of these metals to an extent which would more than offset the advantage to the mines of an increased price of silver. The only source of supply of spot silver in any quantity is the silver dollars held in the United States' Treasury as security against the circulation of silver certificates. The subject is being very seriously considered on the part of various governmental departments, on account of the war needs in connection with India products, whether proper legislation can be obtained whereby the temporary use of this silver in dollar coins can be authorised, the silver to be returned through government purchases at a maximum price which it is expected will make possible an increased production of silver. The notable events of last year in the silver market have been: (1) the highest price in 40 years; (2) the enormous coinage of rupees; (3) the unusually large purchases by India from China and the Philippines; (4) the large purchases by Russia, and (5) the diversion of the usual flow of silver through New York to an equal exportation through San Francisco. The present year may have even more strange events in store for the silver market.

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A REVIEW OF THE MINING INDUSTRY.—I.

Points from the Report of the Secretary for Mines and Industries for 1918.

I.—MINING INDUSTRY.

In the course of his annual report for 1918 the Secretary for Mines writes:—

Gold.—The progress of mining on the Witwatersrand and in the various districts of the Union is fully dealt with by the Government Mining Engineer. The position of the low grade mines on the Witwatersrand continues to be a matter of grave concern to the Government. The Parliamentary Select Committee appointed to inquire into the matter during the 1918 session of Parliament was unable to recommend any of the solutions suggested for this complicated and difficult problem. It is feared that unless conditions improve, the fact has to be faced that the closing down of some of the poorer and nearly exhausted mines will become a reality before the end of the current year. At the time of writing progress has been made with negotiations in regard to the question of obtaining a better price for our gold, and the proposal to refine and mint the Rand output in South Africa has assumed definite shape. The Bantjes Mine closed down during the year owing to the difficulty, under existing conditions, of making a working profit. The closing down of this mine was the subject of a departmental report, which was published in the *Government Gazette* of the 20th December, 1918. It is hoped that mining operations will be resumed on this mine at some later date when conditions are such that they can be carried on to better advantage. A Commission of Inquiry is being appointed by the Government to inquire into and report upon the following matters: (1) The position of the gold mines of the Witwatersrand now working at a loss and of those working at small and diminishing profit; (2) the effect the closing down of such mines would have generally, and especially in regard to unemployment; (3) what steps should be taken by the Government (a) to obviate the closing down of any or all of these mines; (b) to alleviate the position which will be created by the closing down of any such mines; (4) the position in the mining industry, of the native and coloured workmen; (5) the more efficient utilization of the native labour force available. The native labour shortage remains most acute. No doubt the closing down of some of the unpayable mines will to some extent alleviate the shortage of native labour on the remainder which will tend in turn to adjust the consequent fall in production. The Transvaal Mining Leases and Mineral Law Amendment Act was passed during the year, its object being to encourage and facilitate the investment of capital in opening up the large areas awaiting development on the Far East Rand. This Act repeals the provisions of Act No. 35 of 1908 in regard to the leasing of gold mining areas by the Government, and substitutes new provisions of a somewhat more elastic nature. It enables a mynpacht holder, in certain circumstances, to obtain a lease of an additional area contiguous to his mynpacht to be worked in conjunction therewith in order that a workable mining proposition may be created, having

regard to the depth of reef and other conditions. At the time of writing, advantage has already been taken of this provision by the Daggafontein Gold Mines, Ltd., as a result of which a promising area will shortly be opened up on the farm Daggafontein No. 25, on the East Rand. The under-mentioned mineral leases were completed during the year under review:—Springs Mines, Ltd., in respect of the eastern portion of the farm Rietfontein No. 14, in the mining district of Boksburg, in extent 2236 claims. Anglo-American Corporation of South Africa, Ltd. (now West Springs), in respect of the western portion of the farm Rietfontein No. 14, in the mining district of Boksburg, in extent 2236 claims. Barnato Brothers (ceded to New State Areas, Ltd.), in respect of: (1) the farm De Springs No. 15, in the mining district of Boksburg, in extent 1,179 claims; (2) the southern portion of the farm Geduld No. 21, in the mining district of Boksburg, in extent 876 claims. Craigie Mines, Ltd., in respect of: (a) portion of the farm Doornfontein No. 5, in the mining district of Johannesburg, in extent 18 claims; (b) portion of the farm Elandsfontein No. 11, in the mining district of Johannesburg, in extent 13 claims. **Base Metals and Minerals.**—To the statistical details given in the Government Mining Engineer's report in regard to the base metal output, it is only necessary to add a few general remarks from the industrial standpoint. The war period has emphasized and established the importance of Durban as a coaling station for the British Empire. It has a unique position geographically both for the bunkering and for export to all countries in the Southern Hemisphere. With its low price and good quality of coal, Durban's capacity for bunkering and shipping is only limited by the amount of coal which can be hauled from the northern Natal coal fields by the single main line of railway. If the Vryheid and south-eastern Transvaal coal districts develop to their utmost capacity, it would appear that additional railway facilities will be essential if the port of Durban is to be an effective outlet for their production, and if serious delays to shipping, which must detrimentally affect Durban's reputation as a port are to be avoided. It is of interest to note that the Union is to-day the world's leader not only in the production of gold and diamonds, but also of corundum, and that we possess the largest known reserves of these minerals. In the production of asbestos we come fourth, and in coal we are at present the eleventh largest producer. On comparing the tables of the mineral production of the Union for the year 1913, with the year 1918, there is an increase in production under the following headings given in the order of their importance, viz., salt, lime, corundum, asbestos, gypsum, soda, magnesite, and graphite. Copper, tin and lead, on the contrary, show an appreciable decrease in output; but against this many other base metals and minerals have been produced in increasing quantities, which do not figure in the pre-war tables. For instance, iron ore, iron pyrite, iron oxide, manganese, tungsten and mica, besides smaller quantities of such minerals and metals as fluorspar and molybdenite. Some of the most important developments that have taken place during this period and which moreover have a direct bearing on our agricultural industry have been the erection of up-to-date plants in the Union for the manufacture of fertilizers, namely, sulphate of ammonia and mineral phosphate, as well as the production of white arsenic and the local manufacture of arsenite of soda from our own raw materials. In comparing the figures for 1917 and 1918, one of the most noticeable points is the great drop in the production of copper and soda, which in 1917 appeared to reach the high water mark, and the gradual falling off in the production of tin, antimony and lead. The outstanding feature, however, is the sudden development which has taken place with regard to our ferrous metals and minerals. During 1918, South Africa at last entered the ranks of the world's iron producers, and we are at present using our own ores, fluxes and fuel in the production of pig-iron. The question of steel production is now

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receiving close expert attention, and we may well anticipate practical results before long. In the manufacture of paints and distempers, steady strides are being made as evinced in the increased production of iron oxides and similar material; and in the manufacture of sulphuric acid, we are now using only Union ores of iron pyrites. The Union is at present supplying the whole of the local demand for tale and tale products, and it is confidently asserted that on return of normal shipping conditions a trade will be established in this material, as the local tale has been proved to be well adapted for use in the manufacture of paper and rubber goods. Generally speaking, the greatest progress has been made in the production of asbestos and corundum. Both these industries are capable of very great expansion, and no other country in the world can compete with the Union as regards varieties and fibres of asbestos. In actual extent, the crocidolite belt of the Cape Province is probably the largest asbestos area of any kind hitherto recorded; while the eastern Transvaal areas are developing in a remarkable manner. Practically the whole of our production of asbestos and corundum is at present exported in the raw state, but it is satisfactory to record that a beginning has been made in the manufacture of asbestos goods in South Africa. The following classes of asbestos goods of excellent quality are now manufactured locally, viz., asbestos, roofing slates and tiles, boiler lagging, stove bricks, jointing, and packing, etc. As regards copper, owing to the huge stocks in the United States and Great Britain at the date of the armistice, prices have fallen below ordinary costs of production in South Africa. There is hope, however, that buying will recommence before long owing to the increasing requirements for copper in all countries and, in that case, there should be an improvement in price which may help South African producers. The outlook is promising, and, with enterprise, considerable results should be shown in the development of Union deposits of nickel, salt, marble, pyrites, and tin in the future. The available information on these and other minerals can be obtained on application to the Department.

Diamonds.—Notwithstanding the influenza epidemic which ravaged the country during the latter part of the year and interfered materially in this industry, the output of diamonds showed a considerable increase in value over the figures for 1917 although the number of carats produced was somewhat smaller. This is accounted for by the rise in the average price per carat. The alluvial diggings in the Union had a phenomenally successful year and, with the continued rise in the price of diamonds, the diggers on the alluvial fields should be more prosperous than usual. The outstanding feature with regard to alluvial diamond mining was the formation of a Diggers' Union for the Transvaal on the same lines as the Diggers' Union which has been in existence for many years on the Lower River in the Cape Province. The objects of the Union are stated to be: (a) the recognition of all interests which are based on equality and justice; (b) the promoting and supporting of legislation which has for its object the establishment of greater purity of the alluvial diamond industry and the improvement of the status of the individual digger; (c) the eradicating and suppressing of all doubtful systems of alluvial diamond digging which may encourage illicit diamond dealing; (d) the supporting of the diggers' committees and the furthering of any movement that makes for a greater social efficiency. The formation of this Union was taken up enthusiastically by all sections of the digging community, and a well-attended meeting of the Union was held on the 26th of September, 1918, at which the Department was represented. Largely as a result of the arguments brought forward by this Union the Precious Stones (Alluvial) Amendment Act was brought before Parliament during the 1919 Session and passed. This Act provides that every digger and white employee on the diggings must be in possession of a "diggers' certificate," which is in reality a certificate of character. This system has been in force in the Cape Province for many years and has been largely instrumental in preventing illicit diamond buying. Further provisions are made in this law with a view to putting a stop to doubtful systems of digging, such as working on shares with native labourers, and the diggers

are to be congratulated on the result of their efforts in so short a period. Whatever may be said of the alluvial diamond industry in this country, it is an industry which has come to stay and it is encouraging to note the efforts of the diggers themselves to promote the best interests of the industry and to abolish illegal practices. The spirit of self-help, co-operation and neighbourliness are no where more apparent, and the very practical and efficient methods of self-government on the diggings might well form a precedent for other communities and industries. Seven new alluvial diggings were proclaimed during the year in the western Transvaal, while a few new diggings were opened in the Pretoria District and in the Barkly West District of the Cape Province.

Mining Titles Held.—The number of prospecting permits held in the Transvaal on the 31st December, 1918, was 574, as compared with 708 in 1917, being a decrease of 134. The number of claims had increased from 102,043 held on 31st December, 1917, to 109,318 held on the same date in 1918. The following summary shows the various classes of claims held:—31st December, 1917: Prospecting claims (gold), 58,457; diggers' claims (gold), 13,469; base metal claims, 30,117. Total, 102,043. 31st December, 1918: Prospecting claims (gold), 63,764; diggers' claims (gold), 14,104; base metal claims, 31,450. Total, 109,318. It will thus be seen that mining titles are still held strongly in the Transvaal.

Training of Miners.—In view of the success of the Miners' Training School, established by the Government at the Wolhuter Gold Mine on the Central Rand, the Government last year, in consultation with the gold mining industry, decided to establish further schools along the Rand for the training of youths as skilled miners, in co-operation with the Transvaal Chamber of Mines. It was agreed between the Government and the Chamber in regard to these schools: (a) that the Government shall pay two-thirds of the capital expenditure and the Chamber one-third; (b) that the Government shall pay one-fourth and the Chamber three-fourths of the maintenance and running costs of the schools. Three schools have now been established as follows:—At the Wolhuter, Bantjes (working on the Aurora West and Consolidated Main Reef) and the Robinson Deep Mine, while a further school is now in course of erection at the Modder "B" on the East Rand. The schools are managed by a Board of Control appointed by the Government and a Superintendent, and it is proposed to convert the institution into an association, not for gain, under section 21 of the Companies Act, 1909, of the Transvaal. At these schools the apprentice is given a sound training in all the branches of mining. No premium is required from him, but he is paid wages from the date he commences work, and thus becomes self-supporting, while he is being trained to obtain remunerative employment on the mines. In view of the vast improvement in the health conditions underground during recent years, these schools are becoming popular among the youth of this country, and many inquiries are received from all parts of South Africa. An interesting series of articles on the schools were published during the year in *Ons Land*, and these were translated and printed in pamphlet form. All inquiries in regard to the schools should be addressed to the Superintendent, Government Miners' Training School, P.O. Box 809, Johannesburg.

(To be continued.)

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SOUTH AFRICAN TRADE WITH UNITED KINGDOM.

Statistics of Engineering Goods Imported Into British South Africa.

H.M. Senior Trade Commissioner in South Africa communicates the following figures from the latest Board of Trade returns relating to the export of iron and steel, etc.,

from the United Kingdom into British South Africa for the six months ended June 30th, 1919, together with those for the corresponding period in the preceding years:—

	QUANTITIES.			VALUE.		
	Six months ended 30 6 19.			Six months ended 30 6 19.		
	1917.	1918.	1919.	1917.	1918.	1919.
	Tons.	Tons.	Tons.	£	£	£
Iron or steel. Iron, wrought, bars, angles, etc.	1,902	839	866	32,350	14,189	18,883
Cash iron manufactures	1,454	910	1,453	31,567	24,154	45,138
Wrought iron manufactures	663	149	503	28,000	7,222	27,127
Steel. Bars, angles, rods, shapes or sections	2,984	1,305	2,447	126,566	73,790	76,280
Manufactures of steel or iron steel unenumerated	1,110	331	1,231	39,021	17,715	63,625
Rails for railway use	100	13	1,757	2,156	719	31,269
Chairs and sleepers	71	—	260	1,534	—	5,379
Railroad, unenumerated	229	161	3,290	5,940	5,236	51,892
Railway carriages and trucks (not of iron), motor cars, cycles, carts, etc.	—	—	—	2,937	1,851	2,327
Railway carriages for passengers, parts thereof	—	—	—	10,322	6,871	55,690
Railway trucks (not of iron) and parts thereof	—	—	—	22,320	17,422	37,121
Unenumerated parts thereof	—	—	—	22,320	17,422	37,121
Push bicycles and parts thereof	—	—	—	53,475	48,086	60,038
Motor cars, complete—number	23	2	7	6,118	570	2,752
Motor cycles and parts thereof	—	—	—	75,135	24,656	37,978
Wire	121	36	1,255	4,978	2,001	45,214
Wire manufactures	1,321	740	1,503	62,202	14,007	119,716
Galvanized sheets, flat or corrugated	213	11	2,193	5,194	323	67,248
Anchor, cables and chains	275	168	285	10,300	7,856	19,261
Tubes, pipes and fittings, wrought	2,498	1,898	3,940	93,958	68,376	182,933
Pipes and fittings, cast	1,951	2,416	12,430	19,160	23,395	131,322
Nails and rivets	124	219	381	13,401	6,483	17,468
Screws	94	52	287	6,052	3,826	24,957
Bolts and nuts	992	347	978	32,329	14,752	54,437
Machinery and prime movers, except electrical—						
Rail locomotives	1,549	440	250	127,965	22,636	12,796
Agricultural	57	32	167	4,028	2,745	13,986
Unenumerated	128	144	259	14,339	20,796	30,900
Not prime movers or electrical machinery	100	58	214	4,611	4,615	15,986
Mining tools	5,614	2,946	2,332	229,334	162,252	163,938
Unenumerated	2,080	1,189	1,708	128,497	86,881	191,597
Lead	183	33	110	7,626	1,508	4,732
Cutlery—cwts.	963	1,093	1,139	21,872	30,637	41,298
Hardware	12 325	6,909	11,291	55,918	45,068	85,508
Implements, tools	—	—	—	72,803	42,198	135,512

PERSONAL.

Mr. Owen Letcher, of this paper, is making very satisfactory progress after his recent operation.

* * * *

Mr. E. H. Langley, Inspector of Mines for South-West Africa, is on a visit to the Rand.

* * * *

Mr. Chas. Villiers, Chairman of the Native Recruiting Corporation, has returned to the Rand.

* * * *

Mr. E. M. Weston has left for Namaqualand to report on the copper properties owned by the Solomon Syndicate, Ltd.

* * * *

Owing to General Botha's death, the dinner of the S.A. Institution of Engineers, which was to have been held to-night, has been postponed.

* * * *

Mr. A. E. du Pasquier, General Manager of the British Westinghouse Company, Ltd., is confined to the Lady Dudley Nursing Home for a few days.

* * * *

Mr. James West has been appointed manager of the Makganyene Diamond Syndicate, Ltd., and is supervising the test washing that is now taking place.

New Patents.

General Electric Company of Schenectady.—Improvements in and relating to protective devices.

Paul Mende.—Improvements in the manufacture of carbonic gas and in the means of apparatus thereof.

The P. & M. Co., of Chicago.—Improvements in or relating to rail anchoring devices.

Frank James Redman and James Arnold West.—Improvements in supplying air to furnaces.

Archibald Ewing Orr and Arthur Touzet.—Improvements in spark arresters.

John Clark Anderson.—A new or improved plug, cock or tap.

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THE VAAL RIVER AND ITS POSSIBILITIES.—IV.

[By W. INGHAM, M.Inst.C.E., M.I.Mech.E., Chief Engineer, Rand Water Board.]³

MONTHLY DISCHARGE OF THE VAAL RIVER.

It will be observed by referring to Table "E," which gives the average monthly flow of the Vaal River at Vereeniging over a period of 13 years, that the greatest average monthly flow is in January, with 22,507 million cu. ft., while the lowest average monthly flow is in June, with 556 million cu. ft. During October, 1903, the registered quantity at the Vereeniging weir for the month was only 14.5 million cu. ft. The lowest recorded daily flow at the Vereeniging weir has been 4 cusecs, but the Vaal River, below Parys, has stopped running for several weeks together, during a very dry season. It therefore follows that either auxiliary steam or oil plant or storage in reservoirs must be provided where hydro-electric schemes are installed to cover the period of low flow. In the circumstances, the best financial results *will be obtained by a joint power and irrigation project* for it is out of the question to erect auxiliary plant for developing power during the dry season owing to the high capital cost of two separate plants.

DEVELOPMENT OF WATER POWER FROM THE VAAL RIVER.

The provision of cheap motive power is one of the principal factors in the industrial progress of any country. The usual manner of providing power is by the combustion of hydro-carbons, the principal of which is coal. In England alone it is estimated that 80 million tons of coal are consumed per annum in the production of power. For every horse-power generated by water power there is a saving of about 13 tons of coal per annum if 3 lbs. of coal are allowed per h.p. hour for a steam plant. Rain, including snow, is the source of all water power, and after it reaches the rivers it is available for power, but whether it is possible to utilise that power economically is a matter which can only be decided upon after carefully considering the amount of capital required and the cost per horse-power year as compared with the cost of production by other means. Many laymen, and even some engineers, are apt to conclude that water power costs nothing or next to nothing, but this is a fallacy which only needs investigation to condemn it. Where cheap coal is obtainable it may prove much more economical to generate power from that mineral, and one of the finest object lessons in the Union is that of the Victoria Falls Power Company on the Rand. It was originally intended to generate water power at the Victoria Falls, but it was subsequently found that it would be much more economical to generate power from coal obtained from the Transvaal coal-

fields. In some cases it may, however, be found desirable to utilise water power even at a high cost, owing to the price of coal being prohibitive. Another factor to consider is the possibility of having to provide storage in a reservoir for generating power during the dry season when very little water is flowing in the river, or, on the other hand, the necessity of installing auxiliary prime movers for generating power during dry periods. With large rivers it is not always necessary to provide storage, but with South African rivers it may be taken as an axiom that the generation of power direct from the river without storage during the dry season of the year is almost impossible if it is desired to obtain a large amount of power during the whole year. A committee known as the "Water Power Resources Committee" has been appointed by the Board of Trade (England) to investigate the water power resources of Great Britain, and this committee has issued a preliminary report which can be obtained on application to the Board of Trade. It is estimated by the above committee that the capital cost of installing hydro-electric schemes in Great Britain will be about £38.5 per effective electrical h.p. developed at the power stations if the post-war prices are taken as being 50 per cent. above pre-war prices. If, however, interest on capital is allowed during the construction of the works, the cost will be in the neighbourhood of £41 per e.h.p. The committee also say that it will pay to instal hydro-electric stations in Great Britain if the cost of developing water power does not exceed £60 per effective electrical horse-power for a station capable of generating about 5,000 e.h.p.—the basis of comparison being a coal of 12,500 British

³Excerpt from Presidential Address read before the S.A.A. for the Advancement of Science.

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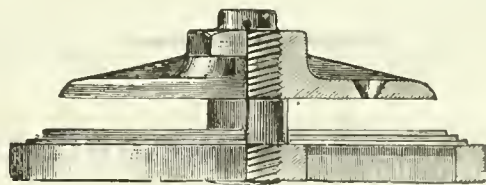
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thermal units at 10s. per ton delivered at the power station. The cost of generation with a 5,000 e.h.p. hydro-electric plant will be about 0.15d. at the station with a properly designed plant if the load factor is fairly high and the demand continuous throughout the 24 hours, and the total cost, including interest and redemption, may be taken at about 0.25d. per unit. In Canada it is estimated that 90 per cent. of the total power generated is obtained from the rivers of the country. The average actual cost of the hydro-electric stations throughout Canada is about £38 per installed e.h.p., including power station plant, buildings, land, transmission and distribution systems, while the average number of employees (white) employed on the undertakings is 4.8 per 1,000 h.p. installed, and the wages paid amount to about £1 per annum per h.p. installed. The cost of erecting a 5,000 e.h.p. steam generating station in South Africa, including land, buildings, plant, etc., at a central station may be taken at about £42 per horse-power. The cost of transmission and distribution lines, transformers, sub-stations, etc., must be added to the above, and this will, of course, vary according to the length of the line, etc. The cost of generation at such a station in South Africa may be taken at about 0.2d. per unit if a 12,000 B.T.U. coal is supplied at 9s. per ton. If interest and redemption is included the cost may be taken at about 0.30 per unit. The cost of a hydro-electric plant in a selected position on the Vaal River would probably be about £35 per e.h.p. and the total cost of generation, including interest and redemption, 0.25d. Taking a basis of 0.25d. per unit, the cost would be £6 8s. per horse-power year for continuous running. The cost of hiring power per h.p. from large generating stations in the United States of America may be taken at from £2 10s. to £6 per annum, according to the nature of the load. In Norway the cost per h.p. year is about £3 10s. for continuous running throughout the year.

PRINCIPAL FALLS OF THE VAAL RIVER.

[TABLE G.]

Position.	Average flow in cusecs with proper storage.	Distance in Miles.	Total fall in feet.	Theoretical Horse Power.
Grootboek Dam Site to Standerton Railway Bridge	700	42	178.6	14,200
Koppiesfontein to Engelbrecht's Drift	1,500	30.8	160.6	27,390
Engelbrecht's Drift	2,000	3.8	48	10,900
Lindeque to Parys	2,500	23.9	163	46,122
At Parys	do.	1.7	81	22,920
Lindeque Falls to de Wet's Drift	do.	57.8	370.3	104,780
Christiana to Windsorton	do.	55	334	94,580
Fourteen Streams to Windsorton Pont	do.	21	232	65,646
Barkly West to Infall of Harts River	do.	24	283	80,078
Total H.P. ..				466,616

The above list shows that a large amount of power is available from the Vaal River, but owing to the long lengths of pipe line required to take advantage of the falls, it is impossible to say, without careful estimates being prepared, whether the schemes are financially sound or not. It is highly probable that hydro-electric schemes at Engelbrecht's Drift, Parys and Fourteen Streams would be paying propositions, but without making proper surveys and estimates of the cost no definite conclusion can be arrived at. The average flow of the river is given in the first column and the total power is roughly estimated at 466,616 theoretical horse-power, while the actual, after allowing for efficiency of plant, etc., will be about 300,000 horse-power.

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THE WEEK IN THE SHAREMARKET.

Exchange Closed Owing to General Botha's Death—A Short Week.

THE week opened with a favourable market, but the disappointing result from the Crown Diamond Mine caused something of a set-back in diamond shares. Till Wednesday the market was firm and active. On Thursday morning the news of General Botha's death was received with deep regret and business was at once suspended for the day. The market has a widening tendency, and the outlook remains favourable. Fluctuations during the week were as follows:

	Fri. 22nd.	Sat. 23rd.	Mon. 25th.	Tues. 26th.	Wed. 27th.	Thurs. 27th.
African Farms	15 9	11 6*	15 1	14 9*	14 3*	—
Anglo-Amer. Corp.	30 0	27 6	27 0*	26 6*	26 6*	—
Apex Mines	7 1*	7 2	7 3*	7 3*	7 3*	—
Aurora Wests	7 0*	8 0*	10 0a	—	—	—
Bantjes Cons.	3 0	3 2	3 2	3 0*	2 6a	—
Brakpan Mines	63 0*	63 0*	63 6b	64 0*	66 0*	—
Brick and Potteries	—	—	4 6*	—	4 6*	—
British South Africa	—	—	—	23 0†	23 0†	—
Bushveld Tins	1 11*	—	2 1	2 7*	2 9	—
Cassel Coals	30 0*	30 0*	30 0*	—	30 0*	—
City and Subs.	7 4*	7 3*	7 3*	7 6†	7 0*	—
City Deeps	57 6	56 6*	56 6*	56 0*	57 6	—
Clydesdale Colls.	22 6*	22 6*	22 3*	23 0*	23 6	—
Con. Investments	28 6*	29 0*	—	—	30 0	—
Con. Langlaagtes	18 6*	—	18 3*	18 6*	18 6*	—
Con. Main Reefs	11 0*	11 0a	11 9	11 6	11 9	—
Con. Mines Selection	24 6	24 6*	24 6*	25 0	26 0*	—
Coronation Freeholds	2 0	1 11	2 0	2 0	2 0*	—
Crown Diamonds	21 9	22 6	22 6	7 9	8 6	—
Daggafontein Mines	23 9	23 6	23 6	23 3*	23 9	—
East Rand Coals	3 0	3 0	3 0	2 9	3 0	—
East Rand Deeps	0 10*	0 10*	0 10*	0 11	—	—
East Rand Minings	20 9*	—	20 6*	20 6*	20 6*	—
East Rand Props.	6 0	5 9*	6 0*	6 0	5 11*	—
East Rand Deb'tures	£67½	£66*	£65*	£65*	£65*	—
Eastern Golds	1 4	—	1 5	1 5	1 3*	—
Frans Smith Dmds.	5 6	5 9	5 6	5 3	5 6	—
Geduld Props.	49 3	48 6	48 9	49 6	51 0	—
Geldenhuis Deeps	—	—	6 0*	6 0*	6 0*	—
Ginsbergs	—	—	—	1 6*	1 6*	—
Glencairns	1 3*	1 3*	1 3*	1 0*	1 3*	—
Glencoe Collieries	6 0*	—	6 0*	—	6 0*	—
Glynn's Lydenburgs	—	15 0*	—	—	—	—
Govt. Areas	91 3	90 6	90 6	90 9	91 0	—
Jhb. Bd. Executors	32 0*	32 0*	32 6*	32 6*	32 6*	—
Jupiters	4 0*	—	4 0*	5 0†	—	—
Klerksdorp Props.	1 6*	1 7*	1 6*	1 6a	1 7*	—
Knight Centrals	7 3	7 3	7 0*	7 1*	7 2	—
Knight Deeps	5 6*	10 0†	7 0*	—	—	—
Lace Props.	19 9	19 9	19 3*	19 6	19 3	—
Leeuwpoot Tins	32 9	29 9	30 0	29 3	28 3*	—
Luipaardsvlei Estates	—	—	3 0*	4 0†	3 0*	—
Lydenburg Farms	8 9	8 9	8 8	8 6	8 6*	—
Meyer and Charltons	—	85 0*	—	86 3†	—	—
Middelvlei Estates	2 0	2 0	2 3	2 4*	2 3*	—
Modder B.'s	167 0	166 0	166 0	167 6a	167 0*	—
Modder Deeps	169 0a	166 6	166 6	166 0*	168 0*	—
Modder Easts	27 9	27 9	28 3	28 0	27 10½	—
Do. Opts. (3 yrs.)	9 4	9 0	9 6	9 4	9 0*	—
Do. Opts. (4 yrs.)	10 1	11 0	11 3	11 3	11 1	—
Hume Pipes	26 0*	27 0	27 6	27 3	27 6	—
Langlaagte Estates	17 6*	17 6*	17 6*	18 0*	17 6*	—

	Fri. 22nd.	Sat. 23rd.	Mon. 25th.	Tues. 26th.	Wed. 27th.	Thurs. 27th.
Natal Navig. Colls.	23 0*	—	—	23 0*	25 0*	—
National Banks	300 0†	300 0†	300 0†	295 0a	300 0†	—
New Boksburgs	—	—	2 0†	—	1 4*	—
New Eland Dmds.	28 6*	29 6†	27 0*	27 0*	27 0*	—
New Era Cons	11 3*	11 9	11 3*	11 6	11 1*	—
New Geduld Deeps	4 9	4 9	5 3	5 4	5 4*	—
New Heriots	10 6	9 0*	10 0†	9 0*	9 0*	—
New Kleinfonteins	10 3	10 3	10 3	10 3*	10 9	—
New Modders	£27½	£27*	£27½*	£27½†	—	—
New Primrose	2 9*	—	3 0*	3 0*	—	—
New Unifeds	—	—	3 0*	3 0*	—	—
Nigels	—	6 3*	7 0	6 0*	7 0	—
Nourse Mines	13 0*	13 3*	12 3*	12 6*	—	—
Prefier Preferreds	155 0†	—	—	155 0†	—	—
Pretoria Cements	89 0†	88 0†	87 0†	83 6*	84 0	—
Princess Estates	1 1*	2 3*	2 3*	2 3	2 4	—
Rand Collieries	3 3*	3 3*	3 3*	3 3*	3 3*	—
Rand Nucleus	1 11	1 9*	1 11	1 10	1 10*	—
Rand Select. Corp.	73 6	—	72 0*	72 6*	73 0*	—
Randfontein Deeps	5 0*	5 0*	5 0	5 0*	5 0*	—
Randfontein Est.	18 0	18 6*	18 6	18 3	18 3	—
Roberts Victors	12 0*	12 0*	12 3	10 6*	12 3	—
Rooibergs	6 2*	6 3	6 6	6 6*	6 6*	—
Rooidepoort Uniteds	—	—	2 9	—	3 0*	—
Ryan Nigels	—	3 9*	4 0*	3 9*	3 9	—
Shebas	2 0*	2 0*	—	2 0*	2 6†	—
Simmer and Jacks	—	—	3 6†	3 6	—	—
Simmer Deeps	2 0	1 9*	2 0*	2 0	2 3*	—
S.A. Breweries	35 0*	35 0*	35 0*	35 0*	35 0*	—
S.A. Lands	6 4*	6 2*	6 2*	6 3*	6 3*	—
Springs Mines	50 6	49 3	51 3	50 6	52 6	—
Sub-Nigels	24 0	23 3	23 6	23 0	22 6	—
Swaziland Tins	16 0*	15 6*	16 0*	—	18 0†	—
Trans. G.M. Estates	13 6	13 3*	—	13 3*	13 3*	—
Van Ryn Deeps	76 6	76 0	76 0	75 9*	76 6	—
Van Dyks	2 6	2 9	3 3	3 3†	2 3*	—
Village Deeps	15 6	14 6a	14 6*	15 0†	14 0*	—
West Rand Cons.	—	—	4 3*	4 6*	—	—
Western Rand Es*	5 9	5 6	5 9	—	5 6	—
Witbank Collieries	60 0*	—	60 0*	62 0*	63 0*	—
Witwatersrands	16 6	16 0*	17 0*	17 3	—	—
Wit. Deeps	13 9	13 6*	13 6*	13 6*	—	—
Wit. Townships	31 0†	—	31 0†	31 0†	31 0†	—
Wolhuters	3 2*	3 0*	3 0*	3 2	3 0*	—
Zaaiplaats Tins	7 8	8 4	8 10	7 9	7 8	—
Union 5 per cent.	£104*	£104½	£104	£104½	£104	—
New State Areas	29 9	29 0	29 6b	28 9	28 6*	—
South Van Ryns	9 6	9 10	9 9	9 6*	9 4*	—
S.A. Alkali	22 6	27 0	27 0	27 6	27 0a	—
Tweefontein Colls.	25 0*	25 0*	25 3	—	25 0a	—
Tudors	1 1*	—	—	1 0†	0 9*	—
West Springs	25 6	25 0*	25 9	25 0a	25 3	—
Do. Options	7 9	8 0	7 9	7 9	7 7	—

*Buyers. †Sellers. ‡Ex London. §Odd lots.

Notice No. 23, of 1919.

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TENDERS FOR ELECTRIC GENERATING PLANT.

TENDERS ARE HEREBY INVITED for the purchase of the complete plant, of which the Engine and Generator is still working, at the Municipal Power Station, comprising:—

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- One Single Cylinder Premier Gas Engine, with Belt.
- One 220-440 volts 3-wire A.E.G. D.C. Generator with Static Balancer.
- One 18 H.P. 220 volts Booster, with Belt.
- One Switchboard, complete with Generator Panel, Battery Panel, Battery Regulating Panels and Feeder Panel.

The above plant is being replaced by a larger one, and will be dismantled as soon as the new set is running.

Sealed tenders, marked on the cover "TENDER FOR GENERATOR PLANT," are to be addressed to and lodged with the Town Clerk, Municipal Offices, Heidelberg, T.P., not later than 12 o'clock (noon) on Wednesday, the 10th September, 1919.

Further information may be obtained from the Electrical Engineer.

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By Order, W. A. ter HORST,
Town Clerk

Municipal Offices, Heidelberg,
Transvaal, 21st August, 1919.

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ENGINEERING SECTION.

THE KALAHARI PROBLEM.—IV.

Electrical Broad Gauge Railway from Capetown and Johannesburg to Gibraltar, Paris and London.

[By AUGUST KARLSEN.]

In this time of aeroplanes and airships many people have lost interest in the question of rapid railway transit. But this is for a time; we have seen that the crossing of the Atlantic in 16 hours from Newfoundland to Ireland is no child's play. The route to South Africa traverses an equatorial rainfall belt of a width of 1,800 miles, or more than the distance over the Atlantic. The supply of helium in sufficient quantity—an indispensable condition—for all the future airships of the world is not yet solved, and will represent, in any case, together with the cost of the aerodromes, such a considerable expense that cheap transport by the air for thousands of ordinary passengers must be postponed to a distant future. Therefore, other countries have not been misled by this air transit, and the great railway schemes, delayed by the war, are again being taken up. The air service will even finally contribute to promote the more rapid railway routes of the world. Already the Channel Tunnel scheme has entirely changed the views of people on the subject, and this tunnel will be followed immediately by the Gibraltar Tunnel. The tunnel under the Irish Channel to Ireland, the tunnel under the Bosphorus, and even that under the Behring Straits. It has taken 16 hours to fly the Atlantic from Newfoundland to Ireland, but the steamers will do these 1,650 nautical miles in 2½ days from Clew Bay, Ireland, to Cape Charles, Labrador, while the railway from that point to Quebec will bring Chicago within 4½ days from London. By Edmonton, Klondyke and the Behring Straits the distance from Chicago to Peking will be 8,000 miles, accomplished in 7 days. The distance Peking—London through the Gobi Desert to Irkutsk will be 6,100 miles in 5 days, and the whole circumference of the northern hemisphere of the earth of 18,300 miles will be made in 17 days, or less than the pre-war time from Johannesburg to London. The electric railway allows a safe speed of 50 miles per hour, even in the heavy gradients, and it is this electrification which makes rapid railway transit possible, provided, of course, that rails and bridges are made for the heavy locomotives required. We shall thus beat the aeroplane, because with passengers the aeroplane cannot travel at night. Chicago via Panama and Peru will be 7,600 miles from Buenos Ayres, to be achieved in 6½ to 7 days, and the distance to be constructed is only from Guatemala to Peru. With a sea voyage of 1,740 miles from Pernambuco to Dakar, easily made in 3 days, and then by the Dakar-Gibraltar railway, the total distance from Buenos Ayres to London will be 5,850 English miles by rail and 1,740 nautical miles by steamer, which journey will be made in 8 days. This route will be realised in the immediate future. South China is being rapidly connected to Mandalay and India; the Afghanistan trouble will be ended by the construction of the railway from Kandahar to Merv and Bagdad, and Bombay via Merv will be 5,300 miles, or 4½ days from London. Progressive Australia will, of course, not be satisfied with the westralian connection of 1,000 miles recently completed through a waterless country, and they will build another 1,000 miles north to Port Darwin. From Melbourne to London, over Java, Sumatra and Malacca, and by rail over Merv, will be 10,050 miles, and over Bagdad 10,690 miles, plus a sea voyage of 1,027 nautical miles, for which the time required will be 10 days instead of a month. With the present means of transport from Johannesburg to Capetown, 965 miles, and Capetown to London, 7,137 nautical miles, total

8,102 miles, we shall be comparatively as far off as the South Pole. The first thing to be done, now that S.-W. Africa is Union territory, is the construction of a line from Mafeking to Okahandja, 634 miles. The route to Mafeking will be through Ventersdorp and Lichtenburg, which, except at Ventersdorp, is a much better line than the Zeerust line. A new line from Lichtenburg to Mafeking, 38 miles, is required, and a loop line from Zuurbeekom to Bank, avoiding the hook at Krugersdorp and the heavy gradient from Randfontein, is on the railway programme. The distance to Mafeking will be 172 miles instead of 189 via Zeerust. Natal and the O.F.S. will be joined by Kroonstad and Klerksdorp with a new line from Klerksdorp to Caligny, 42 miles. The total distance from Johannesburg to Walvis Bay will be 1,011 miles instead of 965 miles to Capetown over Fourteen Streams and the present Hex River Pass. This last may, however, be shortened a little by the Mitchell Pass and Ceres route. The Johannesburg-Walvis Bay line must be electrified to render the journey through the Kalahari supportable, and even with the narrow gauge the speed may thus be increased to the speed Pretoria-Germiston, or to 37 miles, with stoppages, say, 35 miles. The time required will thus be 29 hours. The distance from Walvis Bay to Southampton is 5,350 nautical miles instead of 6,000 miles from Capetown. We will thus save 3 days from Johannesburg to London. The line Mafeking-Okahandja, 634 miles, must, therefore, be constructed immediately in spite of the "Great Thirst" of Lehututu, and in spite of the certain opposition of Capetown. The 700 miles permanent way will inaugurate the iron industry of South Africa. If the Government had been wise enough to establish the national iron industry before the war, these rails would have been available, and the line should have been constructed as a military railway, thus establishing a "fait accompli."

But the "Great Thirst" must be abolished by the Okavango Canal and the irrigation of the Kalahari. In three years' time the railway Dakar-Gibraltar will be ready. The sea voyage will be reduced to 2,970 nautical miles. The speed for this short distance will be increased to 450 miles per day.

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and the journey to 6½ days. The distance from Dakar to Gibraltar by rail is 1,700 miles, and from Gibraltar to London 1,350 miles, total, 3,050 miles. We will then reduce the journey from Johannesburg to London to 10 days, or to a little more than the half of the present or pre-war time. However, this is still not the requirement. We must compete in rapidity with South America, India and Australia, and if possible beat them all. The people will say: "Yes, but what about the Cape-Cairo express?" But this express, so-called, will bring us to the *wrong* end of Africa, and except the Egyptian railway from Assouan to Cairo the whole is a narrow gauge line of 3 ft. 6 in. The distance from Capetown to Cairo will be through the Congo, 5,820 miles, and through East Africa, 5,800 miles. The latter can hardly any longer after the cession of Ruanda to Belgium be an all-British route. The Congo sections of 1,000 miles are more or less in construction, but it remains the part from Lake Albert to Semmar, 800 miles, through the Sudd, a most unhealthy country, and Wadi Halfa to Assouan 200 miles. This railway does not warrant the electrification and the speed will not exceed 30 miles. It is now not even 25 miles. 5,820 miles will thus take 8 days. The travelling in the narrow gauge carriages this length of time is impossible. It is sufficient to travel an hour on the broad gauge lines in France and England even with a speed of 60 miles per hour to know at once the difference. From Cairo through Palestine, Syria, Asia Minor, Constantinople, Turkey, Bulgaria, Serbia and Yongo-Slavia, Triest, Italy, Simplon, Switzerland, Geneva, La Fancille tunnel to Paris and London, on through the future tunnel of Mont Blanc, the distance is 3,540 miles, of which only 450 in England and France, where alone the speed reaches 50 miles per hour. The average will not be 40 miles. This will take 3½ days, and the total distance of 9,360 miles from Capetown to London will take 11½ days at least. From Johannesburg the time may be 10 days when the extension from Louis Trichard to Bulawayo (not over Messina) is completed. Neither as time nor as price or comfort can this route compete with the Walvis Bay, Dakar, Gibraltar route. We must, therefore, find something still better, and this is the *electrical broad gauge railway from Capetown to Gibraltar* through the Kalahari, Angola, Belgian Congo, French Ubanghi, North Cameroon and North Nigeria at Lake Tschad, French Sudan and Sahara and Morocco. The distance from Capetown to Gibraltar will be 5,500 miles and Capetown-London 6,850 miles, saving thus not less than 2,510 miles on the route Cape-Cairo, Aleppo, Constantinople, Triest, Mont Blanc, Paris, London.

The Spanish railways are of a gauge of 5 ft. 6 in., instead of the normal gauge of 4 ft. 8½ in., but a third rail will be placed at once for the direct trains from London to Gibraltar. There will have to be a tunnel through the Great Atlas, but during the construction of this tunnel and of the Gibraltar tunnel the trains will go from Tgli to Oran and with ferry boats to Carthage in six hours. The Cape-Gibraltar railway will cut the Johannesburg-Walvis Bay railway at Lehubutu, 447 miles from Johannesburg, making the journey in 9 or 10 hours. If a third rail can be put in in Spain, such third can also be put in from Johannesburg to Lehubutu, and there will be direct carriages from Johannesburg to London. The whole journey will take from Capetown to London 137 hours, or, with difference of time and stoppages, from Saturday, 3 p.m., to Friday, 10 a.m. in London, total 5 days 19 hours or 139 hours. From Johannesburg, 6,562 miles, the trains can leave Saturday, 8 p.m., collect at Mafeking the passengers from East London, Natal and O.F.S., and the time required will be 5 days 14 hours. The railway will start from a new station on the esplanade in Capetown, follow parallel to the coast to Van Rijnsoord, cross the Langeberg by the Kromme River and the Orange River at Aughrabic Falls, where the first hydro-electrical power station would be established. Through the Kalahari it will follow the Okavango Canal, Andara, and rise by easy gradients over the Angola highlands on the watershed between the Kwito and Huando rivers to a level of 5,200 feet. The power will there be supplied from the Cunene River, Victoria Falls and Kuanza rivers. The railway will thereafter cross the Congo Basin along longitude 19 deg., and Congo itself on a high bridge at New Antwerp (Bangala) at a level of

1,350 feet. Through the Congo the power will be supplied by large cataracts on the Kassai River, and by the lake Leopold II. It will thereafter cross the Ubanghi at the new frontier of Cameroon, follow the border between Cameroon and Ubanghi to Logone River, 1,050 feet. The power will there be supplied by the cataracts of Labai River, South Cameroon, and by the spillway from Logone to Benue, in the neighbourhood of Binder. The railway will pass west of Lake Tschad, through North Cameroon and North Nigeria, where it will reach its lowest point, or 1,000 feet. From Lake Tschad the route will be through the French Sudan to Agades, in the Air, 1,640 feet, and to In Allarem, 1,540 feet, 140 miles north of Agades, where the Sahara begins. This point is 500 miles north-west of Lake Tschad. The railway crosses the desert on 390 miles to Tibeghin, 9,500 feet, at the foot of the great Ahaggar, which rises to a level of over 10,000 feet, and is abundantly supplied with water. On the 390 miles of desert there is a large well at In Guezam, 100 miles from In Allarem, and abundant water in the Tamarrasset, which comes from the summit of Ahaggar. This part is considered to be the most difficult of the whole Sahara, but evidently not worse than some parts of South Africa. The Tibeghin will join the lines from Timbuctoo, Dahomey, and the whole coast of Guinea. Ahaggar is the centre of the Sahara, and from this great mass of mountain was running the pre-historical, immense rivers of Tghanghar, to the Mediterranean Sea, Azouak to Niger, extending over a basin of 1,000 miles and Adran (or Tilensi), crossing the Adran des Thorass, a former alluvial bed of the Niger, now to be irrigated from this river. Through the Adran the railway will pass from Tibeghin to Niger and Timbuctu. At Ahaggar, with its abundant water supply from the high summit, a hydraulic power station may be possible, at least in winter, but with the permanent sunshine a large sun-motor power station should be established. North of Ahaggar we must cross again the desert to Houlef, 950 feet in the Touat (27 deg. latitude) on a distance of 400 miles. But 100 miles north of Tibeghin is the great well of Immeseknau, and further north the line will follow the Oued Tessaret on 180 miles in which water exists at a shallow depth. 30 miles south of Aoulef is the town of Akabli. From Aoulef to Tgli, 310 miles, the line passes through a street of palm trees along the Oued Saoura, where there is not the slightest difficulty. The desert is thus crossed in two steps of 320 and 370 miles in six and seven hours, with sufficient water at regular intervals of 100 miles, or less, and to thus reduce the whole difficulty of the Sahara. Through the mountainous region of Morocco the technical difficulties may be the greatest of the whole line, except the bridge over the Congo. A tunnel through the Great Atlas will be indispensable. Here hydraulic power is found in abundance. The tunnel of Gibraltar will be established between a point west of Tanger and Tariffa, where, however, the depth of the strait is still 1,700 feet.

The East Morocco is not yet pacified, but great progress is made in this direction. In Spain and in France the lines will be rapidly electrified, and we will thus go from Capetown and Johannesburg to London without burning a ton of coal, at least not on the locomotives. This railway will open the whole of Africa and it will become one of the most important railway lines of the whole world. It is infinitely superior to the Cape-Cairo route both as to distance and climate. The unhealthy part is from North Angola to Lake Tschad, 1,500 miles. The unhealthy part of the Cape-Cairo route extends from Victoria Falls to Khartoum, or on 3,000 miles. The heat of the Sahara at the high level will be less excessive than through Egypt. A great portion of the Cape-Cairo line remains to be constructed. This line is of small interest to South Africa, and the different British Dominions or Protectorates have to undertake it or leave it to private capital. This will, of course, not reduce the fares, which is the most important of the whole scheme. The Cape-Gibraltar Railway is of international importance. Everybody is interested in it, and each State will contribute to its construction. The Sahara portion of Lake Tschad is included in the French railway programme for immediate construction. The Belgians would undertake their part at once. There remains the 2,000 miles of Angola, Bechuanaland and

the Cape, say, £16,000,000, of which the Union would have to guarantee the Portuguese section against a more or less free hand for the storage of water in South Angola. If we consider the development that this will give to the iron industry of South Africa, this sum is not excessive. This railway and the irrigation of Kalahari and of the north of South-West Africa on sound engineering principles will transform entirely South Africa. The rapid and cheap transit will introduce broad ideas in the country and the political split will die out. But no time must be lost. The railway must be ready in the same time as the Gibraltar tunnel, or in five or six years. The French will build their part in the Sahara, but they would prefer the East side of Lake Tschad to join the Cape-Cairo line in the Congo, and they might, for the sake of economy, build a narrow gauge line, which at any price must be avoided. An international convention must be arranged at once for the best solution. The electrification of the railways must be made on the same monophasic system with the same pressure of distribution and the same number of periods, and this system, fixed once for all, must be the same for the whole of Africa. The Italians seem to wish to replace the Germans in Angol for the industrial development of this rich province. It is necessary to see that this arrangement does not compromise or interfere with the storage of water for the irrigation of the Kalahari, with the railway, or with the power schemes of the Cunene and Kuanza Rivers. These are essentially of South African importance and should not be let out of our hands. There are here in any case problems of high international importance which South Africa must propose to the different Governments concerned to be settled before works are undertaken in other directions, and it is expected that the technical men of South Africa will abandon all jealousy, stand and work together for the welfare of the country. It is only by constant propaganda that such schemes can be carried through, and it is by the technical man's pressure on the daily press of the whole of Africa and also of Europe that these ideas will spread amongst the public. The following is the time-table of this miraculous railway of Johannesburg-London in 5½ days:

TIME TABLE.—CAPETOWN-GIBRALTAR-PARIS-LONDON RAILWAY.

Leave Capetown: Saturday, 3 p.m. Junction Port Elizabeth, De Aar, Luderitzbucht: Sunday, 1 a.m. Junction Mafeking, Pretoria, Johannesburg, East London, Bloemfontein, Natal, Lourenco Marques, Windhuk, Walvis Bay at Lehututu: Sunday, 7 a.m. Leave Johannesburg: Saturday, 8 p.m. Junction Victoria Falls branch: Sunday, 2 p.m. (where it will take in the trains from Port Amelia, Beira, Madagascar, Reunion, Mauritius, Rhodesia). Leave Beira: Friday, 5 p.m. Tananarivo: Wednesday, 9 a.m. Andara: Sunday, 4.30 p.m. Katanga Junction: Sunday, midnight (with trains from Dar-es-Salaam, Katanga. Leave Dar-es-Salaam: Tuesday, 3 p.m. St. Paolo de Loanda Junction: Monday, 4.30 p.m. Leave Loanda: Sunday, 8 a.m. Belgian Congo Frontier: Monday, 6.50 a.m. Kassai River: Monday, 1 p.m. Bussita River: Monday, 6 p.m. Congo River: Monday, 9 p.m. Junction from Stanley Falls, Victoria Nyanza, Mombassa, Brassaville, Leopoldville: Monday, 9.30 p.m. Leave Mombassa: Friday, 6 p.m. Leave Stanley Falls: Sunday, 11 p.m. Ubangi (French

Congo frontier): Tuesday, 1 a.m. Cameroon Junction: Tuesday, 10.30 a.m. Leave Duala: Monday, 6 a.m. Junction Nigeria Khartoum at Lake Tschad: Tuesday, 12.40 p.m. Leave Lagos: Sunday, 8 a.m. Leave Khartoum: Sunday, 6 a.m. Frontier French Sudan: Tuesday, 2.50 p.m. Air: Tuesday, 11.50 p.m. Hoggar, with Junction from Timbuctoo and the whole Gold Coast: Wednesday, 6.40 a.m. Tuat: Wednesday, 2.25 p.m. Leave Timbuctoo: Tuesday, 7 a.m. Igli Junction from South Algeria: Wednesday, 8.25 p.m. Gibraltar Algeiras: Thursday, 5 a.m. (Junction from Algeria, Tripoli, Egypt-Bagdad, Dakar-South America). Leave Bagdad: Monday, 2 p.m. Cairo: Tuesday, 6 a.m. Algiers: Wednesday, 1 p.m. Junction to Lisbon, arrive Lisbon: Thursday, 2 p.m. Madrid: Thursday, 2 p.m. Zaragossa: Thursday, 5 p.m. Pau: Thursday, 7.30 p.m. Paris: Friday, 5 a.m. London: Friday, 10 a.m. Left Johannesburg: Saturday, 8 p.m. Time: 5 days 14 hours. (Pre-war time: 17 days 14 hours.)

The return train will leave London Saturday afternoon and arrive Johannesburg next Friday morning, crossing the Congo in daytime. It will not take long before these trains, collecting passengers from every corner of Africa, will run every day. There will, of course, also be slower trains. It must be well noted that from the capital of Madagascar to Paris the time is 8 days 8 hours; from Timbuctoo to Paris, 3 days; from Lourenco Marques to Lisbon, 5 days 7 hours; from Loanda to Lisbon, 1 day 6 hours; from Elisabethville to Brussels, 6 days; from Nairobi to London, 6 days; from Khartoum to London, 5 days; from Durban to London, 6 days 1 hour; from Port Elizabeth to London, 6 days 12 hours; from Capetown to London, 5 days 19 hours; from Pretoria-Johannesburg to London, 5 days 14 hours. The Cape-Gibraltar Railway becomes thus the artery of Africa on which everything will concentrate and the New Egypt in South Africa will be born by this railway.

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The Brilliant Record of H.M. Flotilla Leader "Botha."

Of the few British torpedo-boat destroyers which had the opportunity of earning special distinction during the war, H.M.S. "Botha" is one. At the time of the declaration of war she was one of four large destroyers under construction by Messrs. J. Samuel White & Co., Ltd., East Cowes, Isle of Wight, to the order of the Chilean Republic. The contract called for six of these powerful vessels, and two of them, the "Almirante Lynch" and the "Almirante Condell," had already been completed and despatched to Chili before the outbreak of war. This important contract, embodying the construction and equipment of what was to be the most powerful flotilla of destroyers in existence, was obtained in open competition against the world, and it was fortunate for the British nation that it did not go to the German shipyards, as was eventually abundantly proved.

On August the 4th, 1914, these four destroyers passed into the possession of the British Admiralty, and as fast as they could be completed were added to the Navy. All four of them were commissioned as flotilla leaders on account of their superior size, speed and armament, and, with the exception of the "Tipperary" (lost in the battle of Jutland) did service as such throughout their commissions, which lasted until the Armistice was signed.

The "Botha," known originally by its Chilean name "Almirante Riveros," was the fifth of these six destroyers to be laid down, and the war was more than seven months old before she was finally completed and handed over to the Navy. She was actually commissioned on March 29th, 1915, and from that time until early in the summer of 1917 was attached to the Grand Fleet. It so happened that at the time of the Jutland battle she was in dock, and was therefore deprived of the opportunity of showing her capabilities as a fighting unit, for the time being. Her chance, however, came during the early part of 1918, after she had been serving for some nine or ten months with the famous Dover Patrol. Whilst patrolling the Belgian coast in company with the destroyer "Morris" and two French destroyers on the night of March 21st, 1918, a number of German torpedo-boats and destroyers were intercepted in a probable attempt to penetrate into the Channel, as they had done before, and, in the black darkness of a winter night, were quickly brought to action. The fight was short and sharp and was quickly decided in favour of the four Allied destroyers, the principal honours going to H.M.S. "Botha," then in command of Commander Roger Rede, R.N. She rammed, cut in half and sank one of the enemy torpedo-boats (A.7) and sank another (A.9) by gunfire. A German destroyer was also sunk by torpedo in this action, but whether fired by the "Botha" or by the "Morris" has never been clearly decided. Unfortunately during the action the "Botha" was hit amidships by an Allied torpedo, an event which is always likely to occur in a night action of this sort, when, owing to darkness and the blinding effect of gun flashes, it is very difficult to distinguish friend from foe. She was towed into Dunkirk by the "Morris," and after temporary repairs had been effected, reached Chatham for complete repairs under her own steam. That no worse damage resulted from the torpedo is attributed to the placing of her coal bunkers round the boiler-rooms, and, in particular, to the excellence of her construction. The "Botha's" casualties from all causes during this action totalled 37, of whom 13 were killed and 21 wounded (three seriously). Commander Rede was awarded the D.S.O. and subsequently promoted, and many of the officers and men received decorations or were mentioned in despatches. Although she had cut the German torpedo-boat in halves, her stem was found to be absolutely intact. By the beginning of June, 1918, her repairs and refitting had been completely carried out, and, under the command of Lieut. H. B. Hammond Chambers, D.S.O., R.N., had resumed her duties in the Dover Patrol. On July 19th, 1918, however, when on the Middle Barrage Patrol, she struck a mine, apparently on the surface. Here again her sound construction stood her in good stead, for although she had a hole some 34 feet long and 16 feet wide in her port side,

and embracing the Captain's cabin, the ward room, bath room and 1st Lieutenant's cabin, she steamed home to Dover and thence to Chatham at 12 knots. As luck would have it, even although two men were asleep right over the spot where the explosion took place, her casualties amounted to only one man badly and eight slightly wounded. The badly wounded man recovered. Still more fortunate was it that the mine did not explode a magazine close by, although some of the boxes of cordite were damaged and in one or two of these boxes the covers for the charges were scorched. By the middle of September she was back again ready for duty. After the Germans were driven away from the Belgian coast in October, 1918, the "Botha" and the majority of the leaders and destroyers of the Dover Patrol were transferred to the Grand Fleet to form a new flotilla. This flotilla was present at the surrender of the German fleet, and for a month afterwards was employed in guarding the enemy crews at Scapa Flow before it was dispersed. In February last the "Botha" arrived at Chatham and was laid up in reserve. In conjunction with the "Morris" she recently shared in an award of £350 prize money for the destruction of the enemy torpedo boats previously referred to.

Crown Diamonds: Disappointing Results.

We are informed by the board of the Crown Diamond Mining and Exploration Company, Ltd., that the result of the test washing at this property has just been completed and is disappointing. The yield of diamonds per 100 loads of mine ground washed approximates six carats. The diamonds are small and the quality not up to expectations. The directors are now considering the question of undertaking a further test of the mine at a lower level.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Business Still Flat—German Penetration in Trade—View of Labour Unrest—Iron, Steel and Machinery—Timber and Building Materials—Electrical Goods.

Business has again gone very flat on the Commercial Exchange, and hardly anyone will venture to give an opinion as to the whys and wherefors. In the first place it has been a broken month, as nothing was done until August 8th in consequence of the Peace holidays. After then much was expected, but the the optimists were disappointed, as a very hum-drum state of affairs occurred, as day after day went by without the slightest betterment. So much so that a broking member of the Exchange said that this was the worst month he had had for a very long time indeed. It was the outside buying from the municipalities, railways and outside mining propositions that saved the position, as the Belgian Congo, as well as Rhodesia were the chief buyers. The fly in the ointment seems to be the dragging along of the lower grade mines commission, and evidently the Chamber of Mines is awaiting information from that source before going ahead too much, as the various groups are now buying collectively. This means that each one is a clearing house in itself, therefore when any mine in the group has an overplus it is transferred to where it is wanted, and another reason is that the fiat had gone forth immediately after the armistice reserve stocks had to be reduced, and these instructions are and have been most carefully carried out.

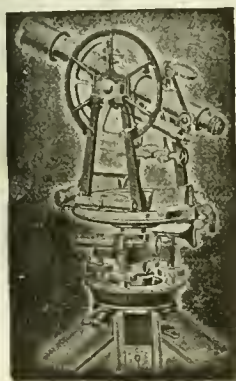
GERMAN PENETRATION IN TRADE.

As intimated in last week's notes, the German element from the internment camp at Maritzburg had begun to make itself busy. A responsible merchant says that German goods are already increasing in Johannesburg, as for example, files and rasps are being offered at much below the British manufacturers' recognised standard price. These particular lines are said to have been made in Germany during the war period. Our informant also remarked that his own traveller found traces of German representatives in the smaller towns and villages, where their quotations were much below the Johannesburg values. It further appears that one case was cited where a representative, not a German, was going to Germany to consult with principals there to re-open up renewed business relations in an orthodox

manner with this country. Undoubtedly this peaceful penetration is bound to expand, as human nature is bound to accept the bait of lower prices when it comes to a matter of pounds, shillings and pence. This important question has been discussed at the Commercial Congress at Delagoa Bay, and the matter was summed up as follows:—"Mr Duncan Baxter quoted from M. Clemenceau's letter to the Germans to the effect that the Allies had no intention of starving Germany or of preventing her from taking her proper place in international trade and commerce, provided that she abided by the Treaty of Peace. That, said Mr. Baxter, was as binding as the actual Treaty, and South Africa was one of the parties to that policy. For that reason he thought the Congress would be well advised to drop the subject. The previous question was then carried."

PSYCHOLOGICAL VIEW OF LABOUR UNREST.

An importer who is in close touch with America, both by cable and mail advices, states that he is afraid that America is in the throes of a trade upheaval on account of the high cost of living and the serious demands of the workers in consequence. Which statement, however, applies the world over. In this connection an unpremeditated interview came about on Wednesday evening with a returned soldier, and that personal face to face chat greatly impressed one as to the reasons of some of the extraordinary happenings in Britain, etc. Our soldier friend had served nearly four years in the trenches, and had been wounded four times, therefore he had spent many months on various occasions at the Richmond Hospital. This gave him an excellent insight into the pros and cons of what was stirring in men's minds, and he was impressed at everyone's cheerfulness and optimism which extended itself throughout the villages where he spent some time recuperating with his family before resuming duty in the trenches. The big feature was the quantity of money about, as everybody had plenty, and although it was all paper, excepting silver and copper, there was no difficulty in passing it; in fact it seemed patriotic to handle paper money. He remarked that people spent money like water in thoroughly enjoying themselves, and let the morrow look after itself. This all became more intensified when the armistice was declared. The great tension was uplifted and thrown to the winds. In his particular case it was a great relief to get away from the trenches, where they had been going over "the top" continuously, carrying their lives in their hands, but even this became much as a matter of course in the days work. After the armistice everybody wanted their release from military service, all in a day, as it were. When often a wave of devilment occurred without rhyme or reason as the many unavoidable hitches came along, creating a veritable pandemonium at times. However, on the whole, the authorities met the peculiar positions as they arose with tact and judgment, and so in the next day or two cheerfulness and optimism again prevailed. In his own case, as he had been wounded four times, and being fairly well off with his army pay, as well as half-pay in Johannesburg, he felt that he was entitled to much consideration, as they had won the war, and what more was wanted of him, and so forth. He thinks his feelings, when reviewed to-day, were very stupid.



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but there it was, and he could not help it at the moment. The single men and young bloods created most of the trouble in striking, as in one village where he stayed they seemed to be looking for the cry of "down tools" and when it came no one seemed to exactly know what all the trouble was about, but they wanted a holiday. He could only liken it to an excited football crowd. He is confident that things will come all right in the Old Country, especially when living is cheaper, as there was no real vindictiveness in the crowd. Of course, it was generally recognised that the Government and others had been exaggerated by each one's own wishes and requirements. In this connection evidence was given at the Low Grade Mines' Commission re the underground workers: "When he comes up he wants some relaxation, and for this reason he does not save the same amount as a man continually working on the surface could. There is the psychological point of view. He is under unnatural conditions all day, and when he comes up the various attractions in the town appeal to him—especially if he is a single man—more than to a man on the surface. He is depressed when he comes up from underground and requires some form of stimulation which is not necessary for the surface workers."

IRON, STEEL AND MACHINERY.

There seems rather big overstocks of small sizes of imported bar iron, and although the standard price to-day is 35s. and upwards, according to the sizes, yet occasional parcels have been under offer at 25s. and even less, which is double the price of pre-Armistice days. Business is quite fair, but perhaps not so active as it was. New steel plates are from £32 to £42 a ton. Second-hand from £15 to £20. Merchants are anxious to know what the first monthly liner from Montreal is bringing in the shape of bar iron, mild steel, steel plates and wire nails. The demand for machinery

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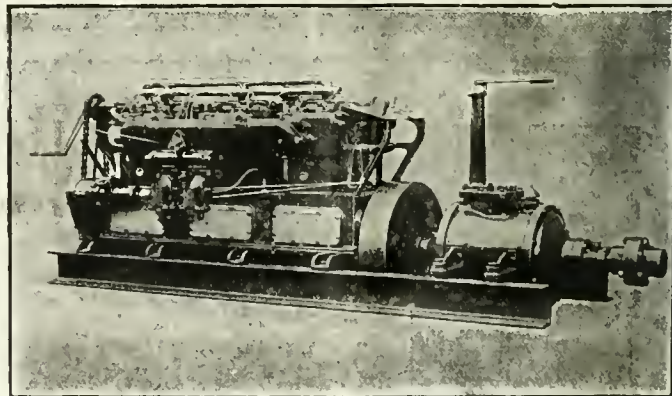
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of all kinds, and more particularly spares from the Natal coalfields, Southern Rhodesia and Northern Transvaal is quite fair and up to the average. The second-hand machinery is getting scarcer from month to month, and the prospects are anything but promising, for the more or less bare yards in Johannesburg to get up something like the old standard of stocks. All kinds of pipes are steadier in values, as the big surpluses of late are being pretty well absorbed, although it will take some time to accomplish this.

TIMBER AND BUILDING MATERIALS.

Deals are up another 1d., making 1s. 8d. and 1s. 9d. per foot; floorings, 8s. 3 $\frac{3}{4}$ d.—9d.; ceilings, 6d.—6 $\frac{1}{2}$ d.; pitch and Oregon pine, 9s.—10s. per cube. The advance in deals is owing to their scarcity in Johannesburg, because of the extraordinary demand from Johannesburg, Reef and country: It is difficult to gather a real idea of the timber market, as shipments are on the way and are anxiously awaited. Prices have risen in the Baltic, as the last cable advices show an increase of £7 to £8 per standard during this month. And again as regards the American market the high rate of exchange is interfering with business, more particularly in cablegrams being delayed; therefore it is difficult to get a clean spot price for acceptance. It is recognised that the exchange is 15 per cent. as against London, and another 1s. can easily be put on, making it 20 per cent., as against South Africa. In this connection one price can be mentioned of poplar wood, which has advanced 2 $\frac{1}{2}$ d. a foot on account of the exchange. This exchange question seems to be a great deterrent against dealing with America. Whether the free dealing in gold will assist this important matter remains to be seen. Galvanised roofing iron is very scarce and any reasonable price can be had for a decent parcel for immediate delivery. The nominal quotations are—up to 10 feet, 1s. 4d.; 11 feet, 1s. 5d.; 12 feet, 1s. 6d. The demand for bricks is very great and cannot be coped with, therefore it is very likely that bricks will rise in price notwithstanding that since April last a rise of 10s. a 1,000 has taken place. Stonemasons, bricklayers and plasterers are scarce. Contracts are plentiful, but the scarcity of bricks as well as cement has checked activity.

ELECTRICAL GOODS.

Tubing has at long last arrived, to the great satisfaction of dealers and contractors, who are now in a position to prosecute to an end the jobs which have been hung up for some months past on account of the absence of this requisite article. Business on the whole is brisk both in town and country. Materials are now coming in fairly freely, and there appears to be no shortage amongst the different electrical distributing firms. The coast, strange to say, are still short of stocks and are still worrying Johannesburg for supplies. Lamps remain as last reported, viz., 23s. per dozen, or 3s. each for the cheaper kinds. Notwithstanding the above one of the largest distributing agents reports that the present month has been the worst for business experienced by him for years past, as after the spurt caused by the festivities there has been practically nothing doing. Signs are, however, not wanting that next month will see a considerable increase in business. He says the mines are not buying to-day, and instanced one case in which a company ordered about the 27th of the month half-a-dozen lamps to be invoiced per September.

Cape Asbestos.

Profit on trading for 1918, after making estimated provision for excess profits duty, income-tax and bad and doubtful debts, and including income from associated companies and profit on sale of investments, is £39,290. After a deduction of all expenditure and £9,332 for depreciation on machinery, plant, buildings, etc., there remains a net profit of £13,418, which, with £5,907 brought in, makes £19,325, compared with £18,520 in previous year. The directors have set aside, to reserve fund, £5,000, increasing that fund to £35,000, and have paid the dividend of 5 per cent. on preference shares, leaving £12,188 available. They now recommend payment on August 2nd of a dividend of 6 per cent. per annum on ordinary shares, less tax, and payment on August 2nd to preference shareholders of an amount equivalent to dividend on ordinary shares, less tax, carrying forward £6,074. Barking factory has been practically completed, and further machinery has been installed in order to meet increasing demands for company's manufactures. Output of manufactured goods has been well maintained despite labour difficulties and the fact that all night work ceased in 1917. A works committee on the lines of the Whitley Report has been established at the factory with satisfactory results. Stocks, as in previous years, have been valued on a conservative basis. The associated companies in Italy and France have been fully employed, and the dividends of 1917 have been maintained.

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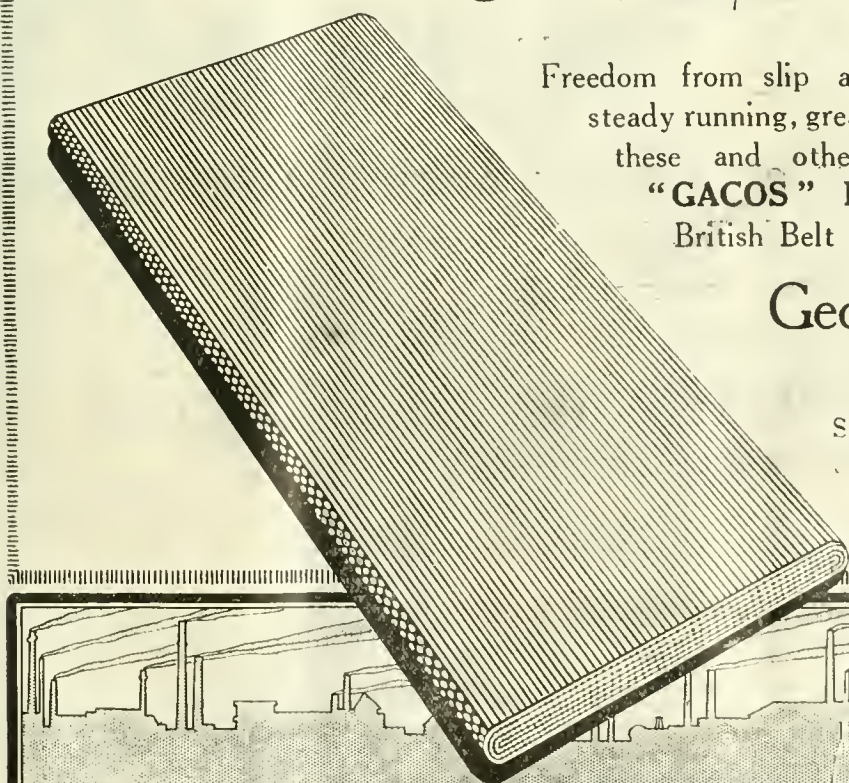
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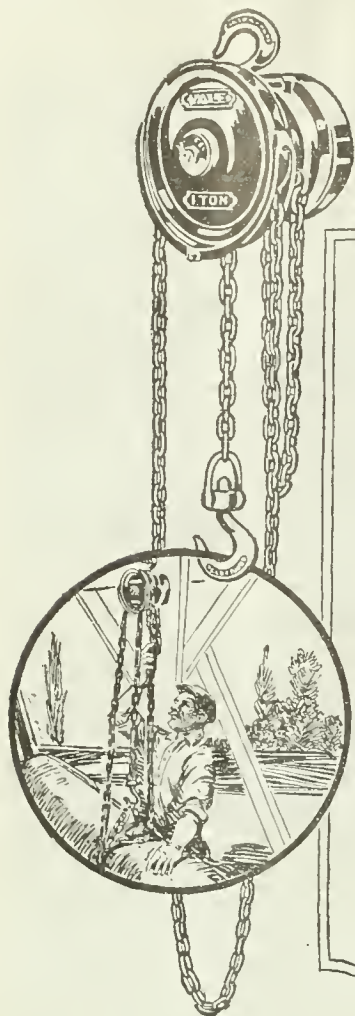
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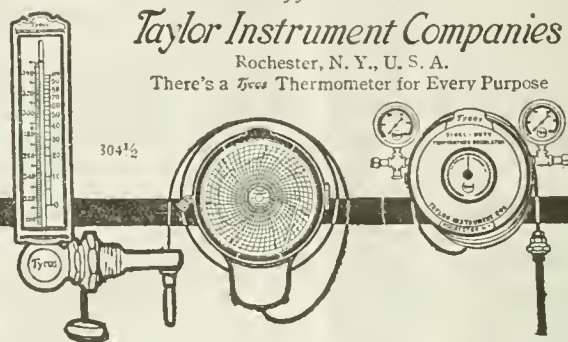
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 The Union Fruit and Citrus Farms, Ltd., 18, Colonial Mutual Chambers, corner of Fox and Loveday Streets, Johannesburg; capital, £10,000.
 Die Bloed Rivier Herdenking Dorp, Genootskap, Beperkt, 30, Royal Chambers, Simmonds Street, Johannesburg; capital, £8,000.
 The Eastern Products, Ltd., 339, Fox Street, Johannesburg; capital, £2,500.
 Argue & Co., Ltd., 15, 45a, Central House, Simmonds Street, Johannesburg; capital, £5,000.
 City Vulcanizing and Retreading Co., Ltd., 17, Harrison Street, Johannesburg; capital, £1,000.
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 Woollens, Ltd., 42, Standard Bank Chambers, Johannesburg; capital, £40,000.
 Rewlatch Dairy Farm, Ltd., 3, Ulster Buildings, 38, Eloff Street, Johannesburg; capital, £1,000.
 The Unified Real Estate Land and Investment Co., Ltd., First Floor, Gresham Buildings, corner of Commissioner and Rissik Streets, Johannesburg; capital, £5,000.
 Vines and Co., Ltd., London House, Loveday Street, Johannesburg; capital, £30,000.
 The Returned Soldiers' Pig Farms, Ltd., 65, Ellis Street, Bellevue East, Johannesburg; capital, £1,500.
 T. J. Armstrong (S.A.), Ltd., Central House, 24, Simmonds Street, Johannesburg; capital, £6,000.
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 John Wilson and Sons, Ltd., 32, Shetwell Street, Doornfontein, Johannesburg; capital, £6,000.
 Central Cold Storage Co., Ltd., 117, Schoeman Street, Pretoria; capital, £150,000.
 Solomon Syndicate, Ltd., 4, Sidney Buildings, 245, St. Andries Street, Pretoria; capital, £20,000.

Grain Mills, Ltd., Carl Street, Pretoria West, Pretoria; capital, £10,000.
 Vetspan Estates, Ltd., Robinson Buildings, Commissioner Street, Johannesburg; capital, £6,000.
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 Boschfontein Gold Mines, Ltd., care of J. S. Richardson, 150 and 152 Stock Exchange Buildings, Fox Street, Johannesburg; capital, £75,000.
 The Transvaal Exploring Land and Minerals Co., Ltd., care of J. H. Rainier, 86 and 87 Stock Exchange Buildings, Johannesburg; capital, £500,000.
 Co-operative Live Stock Insurance of S.A., Ltd., care of John Robinson, 2, Muller Street, Johannesburg; capital, £10,000.
 Pattullo Tyre Sheath Co., Ltd., care of George Mackenzie, 45, Standard Bank Chambers, Commissioner Street, Johannesburg; capital, £28,000.
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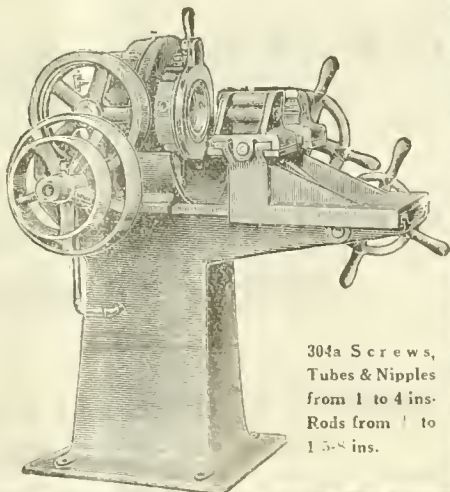
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NOTICE IS HEREBY GIVEN that the Nineteenth Ordinary General Meeting of Shareholders of the General Mining and Finance Corporation, Limited, will be held in the Board Room, General Mining Buildings, Johannesburg, on Thursday, the 4th day of September, 1919, at 11 a.m., for the following purposes:—

1. To receive and consider the Balance Sheet and Profit and Loss Account, and the Directors' and Auditors' Reports for the year ended 31st December, 1918.
2. To elect a Director in place of Mr. Jacob Freudenthal, who retires in terms of the Articles of Association, but who is eligible, and offers himself for re-election.
3. To appoint an Auditor or Auditors for the ensuing year, and to fix the remuneration of the retiring Auditors.
4. To transact any other business which ought to be transacted at an Ordinary General Meeting.

The Share Transfer Books of the Corporation will be closed as follows:

- (a) At the Head Office from the 1st of September to the 18th of September, 1919, both days inclusive.
- (b) In London from the 1st of August to the 9th of August, 1919, both days inclusive.

Holders of Share Warrants to Bearer desiring to be present or represented at the Meeting should deposit their Shares at the places and within the times following:—

JOHANNESBURG: At the Head Office of the Corporation, General Mining Buildings, at least three days before the time appointed for the holding of the Meeting; or

LONDON: At the London Office (Transfer Department), Winchester House, Old Broad Street, E.C.

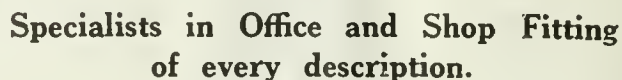
PARIS: At the Paris Office, 29, Rue Taubout; at the Bank de l'Union Parisienne, 7, Rue Chateaub; at least thirty days before the date appointed for the holding of the Meeting.

By Order of the Board,

H. W. DALTON, Secretary

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ESTABLISHED 1891.

VOL. XXVIII., PART II.] SEPTEMBER 6, 1919. [No. 1158.

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Copies of this journal are obtainable at all Branches and Agencies of the Central News Agency, Ltd., at all News Agents and Railway Bookstalls throughout South Africa, and at the London Agency as above.

NOTICE.—The postage of this issue of the *S.A. Mining and Engineering Journal* is: South Africa, 1d. All other parts, 1½d.

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Notes and News.

The General Mining Meeting.

The annual meeting of the General Mining and Finance Corporation was held on Thursday, and a full report of the proceedings will appear in our next issue.

* * * *

Rustplaats Coal.

The Rustplaats Coal & Chemical Company has been formed with a preliminary capital of £20,000 to take up and develop 2,400 acres of coal-bearing ground in the Vryheid district. The property acquired by Messrs. Henry Adler and Andrew Cohen has now come under the powerful aegis of the Barnato control. The chairman of the new company is Mr. Gustav Imroth, while the other directors are Messrs. John Munro, J. Andrew Cohen, H. Adler and Richard Goldmann. Two seams of coal have been proved of 5 feet and 7 feet thickness, with a calorific value of between 12,75 and 13, and 2 per cent. nitrogen. The initial policy is to prove the coal measures, but eventually to win the associated by-products, synthetic ammonia being the principal. Judging from the success of the Natal Ammonium, there should be ample and profitable scope for the new company, which is assured of efficient technical management. It is also proposed to develop an export coal trade.

* * * *

Crown Diamonds.

The secretaries write:—We beg to advise that detailed results of the recent test washing carried out at this company's mine are now to hand, as follows: Total number of loads hauled, 5,920; deduct stone picked from sorting belts, 598; total number of 16 cubic feet loads washed, 5,330. 293½ carats of diamonds were recovered, and are said to be small and of inferior quality. The parcel has not, however, yet come to hand so that the actual value is not definitely ascertained. The board have completed arrangements whereby 10,000 additional loads of ground will be washed from the mine, and a further scheme of development will be taken in hand immediately, whereby the mine will be tested at a level 100 feet lower than that from which the recent washing results were obtained. These additional operations will naturally cost some thousands of pounds. As the company have no funds of its own with which to undertake these operations, Messrs. Lewis & Marks have again come forward as in the past with the necessary funds required for the purpose.

* * * *

Pretoria Portland Cement.

The annual report of the Pretoria Portland Cement Company shows a distributable profit, after making allowance for income and excess profits taxes to 30th June last and providing fully for doubtful debts and depreciation of property, buildings, machinery and plant, amounting to £123,354, practically all from trading, though £2,500 was made from sale of Hume Pipe shares, received for the assets of the Concrete Construction Company. Dividends absorbed £67,500, and the carry-forward is £86,400 as against £24,500 brought in. It may be noted that the profit represents over 40 per cent. on the capital, but only 22½ per cent. was actually distributed. The following property was purchased: 33 morgen of "Welverdiend" No. 116, Marico. This is most favourably situate to Slurry, and contains a large body of shale suitable for cement-making, and will later on be opened up for supplying requirements at No. 2 works. Some 500 morgen of "Rietvallei" No. 112, Marico. This is a lime-bearing property situate within two miles of the Slurry quarries, the limestone being of equal quality. In view of the demand for Pretoria cement, a third rotary kiln and accessory plant have been ordered for Factory No. 2, Slurry, which will increase the production there by 50 per cent. The estimated cost is £80,000. It will be seen the funds in hand more than cover this expenditure. The existing machinery is working satisfactorily. All supplies of lime stone for No. 1 works are being drawn from the quarries at Kalkhenvel and Graspan, the quality continuing entirely satisfactory.

Trade and the Railways.

In regard to railway matters, the Chairman of the Witwatersrand Commercial Exchange, at the annual meeting this week, said: "In offering hearty congratulations to Sir William Hoy on behalf of the Exchange on his safe return to South Africa, I should like to remind him of the very great inconvenience caused to the commercial community as also to the general public, owing to the shortage of trucks and engine power on the railways. I realise, of course, the enormous difficulties the railway authorities have had to contend with during the war, but it is not very comforting to find that while the coal mines are unable to get trucks to supply coal for essential industries and for the public, engine power and long lines of trucks can be supplied for an afternoon's sport at a race meeting. It seems to me that what is required is the centralisation or consolidation of the control of the distribution of trucks. Another matter for complaint is the serious delays experienced by merchants in getting goods conveyed from their stores. Instead of some being removed daily as formerly it now takes three or four days to get a trolley, with the result that merchants' stores become congested. Surely means can be devised to prevent these delays."

Col. Pritchard on the Colour Bar.

Giving evidence the other day before the Low Grade Mines Commission, Colonel Pritchard, Director of Native Labour, dealing with the colour bar, said that it was futile to attempt any longer to confine to their present sphere of labour some 200,000 industrious and generally efficient labourers who were in some cases actually more highly skilled than their European overseers. In the past the efforts of these people to ventilate their grievances by strike measures after the manner of Europeans had usually been dealt with successfully by Government by the display of force, but it was not to be expected that this remedy could be successfully employed very much longer unless appropriate remedial measures were taken. Continuing, the witness said: "It is my considered opinion that serious trouble is inevitable in the near future, and that the time is not far off when the standing army will not keep at work a mass of workers who have little to lose and all to gain by concerted action in the direction of overthrowing the system which actually prohibits their advancement. To tinker with the matter at the present time is only to postpone the evil day. "A choice of one or two alternatives presents itself—either to continue to sit on the volcano, with the day of eruption drawing nearer and nearer each day, or to treat an admittedly grave situation in a big and statesmanlike way by eliminating the colour bar, thereby going at the root of inefficiency alleged to be throttling the low grade mines, as well as taking out of the hands of the natives one of the most powerful political and industrial levers that can be exerted against the Government and the white community generally and definitely laying down that white and black shall in future compete in the industrial world on their merits."

The Diamond Boom.

A Paris correspondent of one of the London papers writes that the reason for the boom in diamond shares is the desire of a very large number of wealthy people on the Continent to dissimulate, as far as possible, the amount of their capital from the fiscal authorities, especially from the income-tax officials, and as a precaution against the expected heavy post-war taxes on capital and on investments of all kinds. These folks long since came to the conclusion that investment in diamonds was a paying business. The increase in the annual output of the stones is not, comparatively speaking, great, and under a very small bulk a diamond represents a large sum. Moreover, the stones do not deteriorate with age, and their increase in price amply pays for investment, for it is rare that a diamond, bought at its market price ten years ago, cannot be now sold for a considerable profit. The Germans began to buy diamonds as an investment—through Holland and Switzerland—four years ago, and have continued to do so ever since. Another reason, the political reason, is the widespread fear amidst the timorous wealthy

classes on the Continent that the present evolution of the world is towards a gradual but complete readjustment of the relations between capital and labour, which may be attended with a great upheaval of the social fabric. The sight of thousands of wealthy Russian "émigrés" arriving in France and in Switzerland, with almost worthless paper roubles, but with immense sums in small leather satchels of diamonds which were realised without difficulty, has produced an extraordinary effect on the well-to-do. Hence it is that large numbers of French capitalists have, in their turn, taken to investing their available assets, or a large portion thereof, in diamonds. Apart from these two reasons there is another, given as the cause of the steady increase in the value of diamond shares. This consists of the important purchases of diamonds for ornamental purposes made especially by Americans, during the first two years of the war, and, later on, by the thousands of European "war profiteers."

Cement.

Elsewhere in this issue will be found an abridged prospectus issued by the Mozambique Portland Cement Co., Ltd. This company has been recently formed for the purpose of manufacturing Portland cement, and with this object in view has acquired a concession from the Portuguese Government which carries the exclusive right to manufacture cement within the Province of Mozambique. The concession also relieves the company from the payment of all import duty on machinery and plant which are needed for the erection of the factory. The company has also secured very rich deposits of limestone and clay which have been found, examined and proved on the freehold farm "Salamanga." The latter is situated on a navigable river about thirty miles from Lourenco Marques. Reports on the raw materials and analysis have been made by Professor Wilkinson, M.A., F.C.S., Mr. Alex. Heymann and Mr. J. Thorburn, Mineralogist. These reports clearly indicate the richness of the lime and clay deposits and their suitability for the manufacture of cement. Particular attention is drawn to the fact that all the necessary raw materials for the purpose are on the company's property. Cheap native labour is also in abundance in that part of the country and an extraordinary cheap means of transport to Lourenco Marques is at the disposal of the company by using the Maputo River, which is navigable all the year round. The water of the river is good and suitable for manufacturing purposes. There is an abundance of timber available in the neighbourhood for fuel, although in the estimates of expenditure the company has allowed for the use of the more expensive fuel, coal. All things considered, the Mozambique Portland Cement Co., Ltd., can be congratulated in having secured such a valuable concession and such a rich property containing limestone and clay. Under the ideal conditions that exist the cost of production can be reduced to the lowest possible figure. And what of the output? The company should not have any difficulty in disposing of its cement. In South Africa since 1915 there has been a very great scarcity of cement owing to importations having ceased. The existing factories in the Union have not been able to supply the demand, consequently the erection of public and private works, factories and buildings have been retarded and, in other cases, deferred. It is unlikely that importations will be resumed owing to the great demand in Europe for this article for re-building devastated areas and also owing to the higher cost of production there. The demand in South Africa for cement is increasing for the purpose of building irrigation works, silos, stock dips, factories, railway construction and harbour extensions, and also, we hope, grain elevators at the coast. In the Mozambique Province it is stated that great developments are taking place and that the Province itself will require about 25,000 tons of cement per annum, which is equal to 40 per cent. of the estimated output of the company. On this basis about 35,000 tons will be available for distribution within the Union. In this connection it is interesting to note the proximity of the company's works to the coast. The Union's coastal towns and surrounding districts can be supplied by cheap sea freight. On the whole, it would seem that the prospects of the company are very bright.

The Profiteering Question.

Speaking at the annual meeting of the Witwatersrand Commercial Exchange this week, the Chairman, Mr. A. Y. Niven, said: "At our last annual meeting, it was clearly demonstrated that the charge of profiteering that had been made against members of the Exchange were not justified. In order to account for the exceedingly high prices of many lines in Johannesburg, I think it is only necessary to call attention to one or two matters which have received a good deal of publicity recently. As is well-known, the prime cost of most goods has increased enormously, while there has been a big advance in freights, but surely a more inept method of reducing the cost of living could not be imagined than that adopted by the Customs authorities in making merchants pay duty on the replacement value of goods, instead of on their actual cost. Again through the action of certain parties, I am informed, holding up large quantities of mealies, the staple food of the great mass of the people, the price has been forced up to 20s. and more per bag, a price which is acknowledged on all hands to be exorbitant and which constitutes a cruel tax on the poor and on the natives. Seeing the Government can regulate the price of sugar, I can see no reason why they should not step in and stop profiteering in mealies. Another factor which tends to enhance prices here is the fact that in America the sovereign is at present only worth 17s. This means that a heavy premium has to be paid on all our imports from the United States and also that duty has to be paid in South Africa on £115 for normally £100 worth of goods imported from that country."

* * * *

British Coal Commission Reports.

A summary of the analysis of the British Coal Commission Reports shows on what principle and recommendations they agree and on what they differ. It is very significant to note that the whole Commission is agreed that coal itself should be nationalised and that there is a majority of ten to three in favour of paying fair compensation to the royalty owners. Clearly, then, private royalties and wayleaves are destined to go by the board. But while the members of the Commission agree as to the State purchase of royalties they disagree absolutely as to the State ownership of mines. The chairman, who proposes nationalisation in 1922 and continued control in the interim, suggests that the State should buy the collieries at a fair value to be paid in bonds, that a local mining council of workers and management be set up at each mine, that district mining councils for fourteen districts be established for the sale, distribution and export of coal, and that a National Mining Council, with a standing committee, be elected by the district councils to advise the Minister of Mines. The miners' members agree to this proposition, but want a larger representation of the miners on the district and national councils. The mine-owners are against nationalisation, but they also assent to the formation of pit committees and district and national councils, together with a miners' department and a consultative committee to consist of owners', workers' and consumers' representatives. Sir Arthur Duckham is wholly against nationalisation, but he likewise favours a Ministry of Mines with specified functions and pit and district committees. As half the members of the Commission are with the chairman, or seven to six, on the main question, nationalisation has won, to use a sporting phrase, by a short head. It may therefore be taken for granted that the Government will at least feel it necessary to submit the subject to Parliament for discussion, probably on a proposal to establish a Ministry of Mines, who may or may not be charged with the duty of paying the way for nationalisation in 1922 and for authorising the formation of the approved pit committees and district and national councils. Such a proposal, minus nationalism, would clearly find favour in the coal trade and in the country.

TOPICS OF THE WEEK.**A COMMERCIAL REVIEW OF RAND CONDITIONS.**

The annual meeting of the Witwatersrand Commercial Exchange usually provides an occasion for an authoritative review of Rand trade conditions. At the meeting held this week, Mr. A. Y. Niven discoursed at considerable length on the situation and made several important points. He mentioned the standardisation committee formed by the Chamber of Mines, and said that this committee had fixed standards for quite a number of articles largely used by the mines. This should result in a saving alike to the mines and the merchants. "Unfortunately," he added, "several of the mining groups found it necessary some months ago to impose some rather stringent restrictions on reef travelling, but as a result of representations made by the Standing Committee certain modifications were secured. I feel sure this matter will have the attention of the incoming committee. Should it be found that the present restrictions act detrimentally to the interests of the mines and merchants, further representations will be made. I am reliably informed, however, that if the instructions contained in our circular of the 28th May are carried out, few difficulties will be experienced." In regard to trade with the Mother Country, Mr. Niven said: "I take it we are all in sympathy with the efforts being made to foster and encourage trade with the Mother Country, and for this purpose, I hope members will make full use of the facilities offered by His Majesty's Trade Commissioner. Mr. Wickham's office is intended to be a centre of information and advice, or in other words, a Commercial Intelligence Department of the British Empire. Restrictions on the importation of merchandise from Great Britain have now been removed, and in spite of the keen competition for this market by other countries, I trust that British manufactures will continue to hold the supreme place. It is rather disconcerting, however, to find that owing to high costs of production and uncertainty as to delivery owing to labour troubles in Great Britain, large volumes of business which ought to go to the Mother Country are being diverted to America and elsewhere. The one hopeful sign is that the leaders of the Trade Union movement and the public generally in England appear to have realised the seriousness of the situation." Later on in his address Mr. Niven said: "The question of enemy trading after the war is one that has reached considerable attention from members. Individuals who were subjects of countries which were at war with Great Britain from 1914 to the conclusion of the war are debarred from becoming members of the Exchange. I take it you have no wish to modify that rule. It is well known that before the war the German export trade was fostered by a regular system of preferential rail and steamship rates, and not only so, but by means of secret rebates given in defiance of agreements made with British shipping companies. Needless to say, it should be our business to see that measures are taken to prevent such things happening in future." Mr. Niven ended in a hopeful strain: "As has been so frequently pointed out, there is a great future before this country," he declared, "industrially as well as commercially. We have been saved the terrible destruction of capital that has taken place in Europe, and given a spirit of reasonableness and co-operation on the part of all sections of the community there is every reason for us to look forward to the future with hope and confidence. At the same time, if we are to maintain our supremacy, it is essential, as I pointed out last year, that our production is increased. Unless we produce more, there is no hope of a reduction in the cost of living, but on the contrary, further increases must certainly be looked for."

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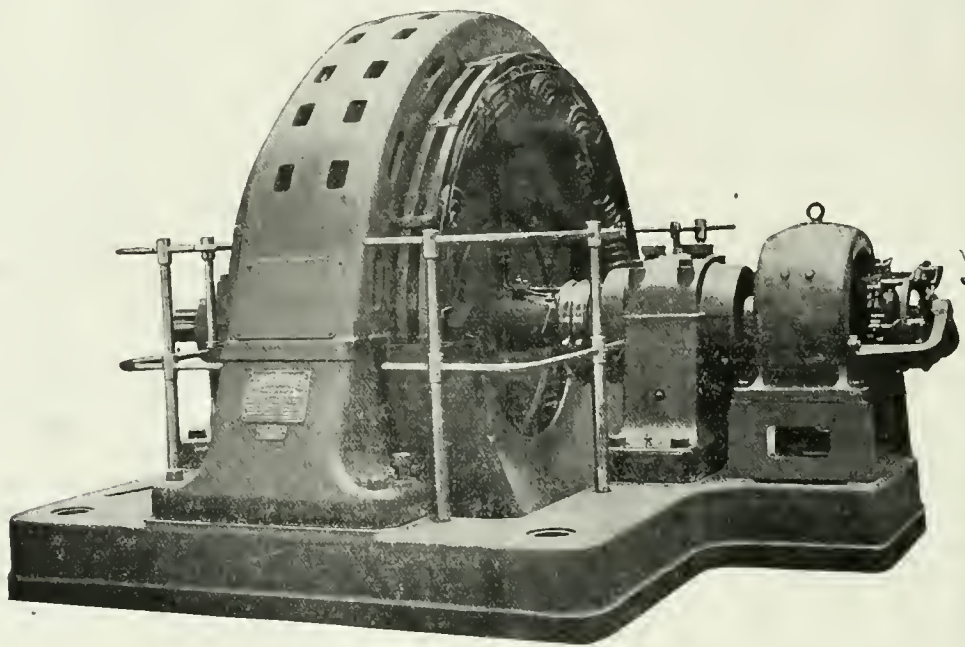
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THE FEDERATION OF BRITISH INDUSTRIES AND EMPIRE TRADE.

Its Aims and Objects—Visit of Mr. C. W. Francis Harrison—Story of a Great Organisation.

ONE of the most significant signs of the new spirit that the war has brought to us has been the establishment in 1916, and the phenomenal development since, of the Federation of British Industries. Begun three years ago as a voluntary association of 100 British manufacturing firms, the Federation now has as direct members 900 firms and 200 trade associations representing in all over 18,000 manufacturing firms, every one British. The size and importance of the Federation will be still more clearly understood when it is stated that the aggregate capital of these firms amounts to over 1,000 million sterling, employing some 4,000,000 workers. Its members have associated themselves together for purposes of mutual assistance and discussion on almost all subjects of common interest; every one of them realises that their own personal and particular advantage, including the welfare of their employees, is absolutely bound up with that of British trade as a whole. It will be understood that with this spirit through all its members the Federation is the greatest power for the encouragement of British trade which has ever existed. The organisation of this large body has been the result of a gradual and logical growth; so far the vast majority of its members are firms established in the United Kingdom, and therefore the first classification was that of districts. There are now established in Great Britain and Ireland 16 district offices in the principal industrial centres, each with its own secretarial staff; this is in addition to the large organisation at the head office in London. As the Federation grew it was realised that a systematic industrial classification of its members was absolutely essential to real efficiency in the carrying out of the purposes for which it was formed. After two years of work this classification is now taking its final form. The whole industry of the country is divided into 18 main groups, for example, textiles, iron and steel, etc., etc. These groups again are divided into about 90 sub-groups and sections, as, for example, wool, machine tools, etc. Every one of these sub-divisions has its own committee, or sub-committee, at the meetings of which subjects special to the particular trade or industry are discussed. This is the first occasion on which the industry of any country has been successfully brought under a comprehensive and detailed classification by trades. The value of such classifications is at once apparent. It enables the Federation to obtain without delay the views of any particular section of industry on any point of importance which may arise. It enables the main committees of the Federation to compare the views of all the different trades and evolve a policy which shall co-ordinate these views. Moreover, when the Government desires to have the considered opinion of the whole or a part of the industrial community on a legislative proposal, the Federation is in a position to obtain that opinion with comparatively little delay. Yet another important function of the group system, as it is called, is the assistance it enables the Federation to give to would-be purchasers of British goods by putting them immediately and directly in touch with the manufacturers able to supply their needs. Supposing, for example, a representative of a foreign syndicate arrives in London and wishes to buy, say, motor vehicles and agricultural machinery, as soon as he calls at the head office particulars of his requirements are sent by circular letter to every member of the motor vehicle and agricultural machinery sub-groups. As soon as replies are received he is immediately put in direct touch with those members who have indicated that they are prepared to supply him. He thus avoids the trouble and delay which would result from approaching many firms who would not be in a position to tender for his orders. Moreover, the issue of the circular letter involves no obligation of any kind on the intending purchaser, nor is any charge made for this service. Every Monday the Federation issues a "Bulletin" descriptive of its activities, and with

this goes a confidential supplement recapitulating the enquiries which have been received and circulated to interested members. The latest, and perhaps most important, activity of the Federation is the establishment of an overseas organisation which is at present in its infancy. The basis of this organisation is the establishment, in the principal market centres of the world, of Federation Commissioners who will almost exactly fulfil the long-felt need for real trade ambassadors. In every case Englishmen of good standing and trained business experience are being appointed, and their functions include assistance to the overseas trade of members in almost every possible way. They will, for example, collect information of all kinds, status, trade requirements, etc., useful to members; they will assist members in the appointment of suitable agents; they will obtain the fullest facilities for members or their representatives visiting overseas markets; they will keep for the reference of possible buyers catalogues and samples of British goods; they will act as centres of British trade propaganda in the countries where they reside; they will be men of a class able to approach the highest Government and other authorities; and they will, of course, have an efficient secretariat and first-class offices. It is hoped, if funds permit, to have eight or nine Commissioners appointed by the end of the year. Where the area of supervision allotted to the Commissioner is too wide for personal control he will be expected, as his work develops, to appoint under himself suitable sub-commissioners in the various trade centres coming within his sphere. Thus, the final organisation, it is hoped, will consist of some 22 Commissioners, under each of whom will be three or more sub-commissioners. When this great aim is accomplished it is felt that British trade will have real first-class representation throughout the civilised world. But the realisation of this ideal depends almost entirely on the amount of support which is afforded to the Federation by the industry not merely of the United Kingdom, but of the whole Empire. An idea of the cost of the service may be had from the fact that each of the Commissioners so far appointed at Madrid, Athens, and Rio de Janeiro will cost, together with their establishments, something like £7,000 to £10,000 per year. In view of the heavy expense entailed by the appointment of Commissioners it has been essential to select carefully those markets where, first, British traders need help most, and second, where the biggest results are likely to be achieved. So far as the Dominions are concerned, it is felt that when trade resumes its normal state the British manufacturer will take once more his dominant position in those markets, but it is nevertheless the intention to proceed with the appointment

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of Commissioners in the Dominions at the earliest possible opportunity or whenever the circumstances affecting British trade are such as to demand them. In the meantime importers and buyers are cordially invited to let the Federation know what they want, and not to hesitate to tender criticisms and advice to the British manufacturer through the Federation. In cases where such has occurred let the importer and buyer tell the Federation why they have gone to foreign sources of supply for goods which the Mother Country should be able to give them. And let those interested in raw materials inform the Federation what they have to offer to the manufacturer in the United Kingdom. It is hoped that the Federation of British Industries will soon become a body of such magnitude and farspread influence as to number amongst its members all British manufacturers and producers throughout the Empire. If this ideal is realised it will enable British commerce to be built upon the most solid foundation of co-operation and understanding between all the producing elements within the British Commonwealth of Nations. The old incoherent mixture of policies and aims, all working at cross purposes, will disappear, and unnecessary waste of money and effort will cease. The British producer or manufacturer in the furthest outlying part of the Empire will know that his interests and his rights are being safeguarded by the greatest force which has ever taken part in the industrial and commercial history of the world.

THE FEDERATION IN THE SUB-CONTINENT OF AFRICA.

In respect to South and East Africa and adjacent territories, the Federation, realising the importance of these markets, has despatched a Special Commissioner on a tour through the countries, namely, Mr. Francis Harrison, F.R.G.S., F.S.S., who was formerly Trade Commissioner for Natal and some time Acting Trade Commissioner for the

Union Government. Mr. Harrison is making investigations into the present trade conditions and future prospects, and the opportunities there are for the British manufacturer to obtain raw materials from this portion of the Empire. He has also been requested to advise upon the type of organisation needed by the Federation to serve the above-mentioned territories.

Rhodesian Mining Affairs.

The report of the Executive Committee of the Rhodesia Chamber of Mines states that the Chamber has received advice from the Secretary for Mines to the effect that cabled intimation has reached the Administration from London, from which it would appear that Rhodesian producers of gold will be placed on the same footing as Union producers, and will receive the benefit of any higher price of gold that may be realised. An arrangement has now been practically concluded between the R.N.L. Bureau on behalf of certain subscribing public bodies in S. Rhodesia, and the S.A. Institute for Medical Research, Johannesburg, whereby for an annual commuted payment the Institute has undertaken to give certain services free of charge, including vaccines and sera prepared at the Institute, and examination of specimens. Also the Institute will supply at cost price such vaccines and sera which are not prepared by it, but which are imported and stocked for the convenience of subscribers. It is hoped that this arrangement will come into force on the 1st September, and subscribing members will be at once notified as soon as the date has been definitely agreed upon. This arrangement is the outcome of Dr. F. S. Lister's visit to this territory in June, 1918, when that eminent scientist conducted investigations into pneumonia amongst native mine workers, and recommended that prophylactic inoculation should be resorted to with a view to reducing the mortality amongst natives from that disease.

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THE MINERAL RESOURCES OF THE SOUTH-WEST PROTECTORATE.

[By E. LANGLEY, Inspector of Mines.]

[This is the fourth and final portion of a report supplied to the Department of Mines and Industries by Mr. E. Langley, Inspector of Mines, Windhuk, through the courtesy of the Protectorate Administration.]

MINERAL RESOURCES.

The country is well adapted for prospecting, owing to the sparse vegetation. Outcrops can be seen in most localities, the exceptions being the Namib owing to the sand dunes, the Kalahari on account of the recent deposits of limestone and sand, and the alluvial ground in the valleys. Europeans, much less prospectors, have not explored parts of areas situated in the Namib between Luderitzbucht Railway and Kuisib River (Walvis), the Kaokofeld, Amboland, Caprivi Zipfel, Kalahari, and the north-east of the Protectorate.

NAMIB.

In the Namib, between Luderitzbucht and Kuisib, the country which immediately adjoins the coast line has been prospected by persons interested in diamonds, to the discovery of which their energies have been directed. From east to west this area, which is 15,000 square miles in extent, has only been crossed by a few expeditions which followed the courses of the dry river beds of the Tsauchab, Tsoudab, and Tsama. Patchy work was done on these excursions, as the lack of water and the dangers to be expected from the shifting sand-dunes forced the explorers soon to return to the coast.

KAOKOFELD.

In the Kaokofeld (39,000 square miles) but few geological expeditions have been made owing to the concessionaries refusing, until recently, to allow prospecting.

AMBOLAND AND CAPRIVI ZIPFEL.

Amboland (18,700 square miles) and the Caprivi Zipfel (10,574 square miles) were closed to the white population principally on account of native unrest.

KALAHARI AND N.E. OF THE PROTECTORATE.

The Kalahari, Khausas area, East Onabeke, Kaukaveld, and so far as the northern boundary of the Protectorate (40,000 square miles), also areas situated outside the police zones, and not open for settlement, have only been traversed by a few scientific and military expeditions, and occasionally by hunting parties. The mineral resources have not been exploited on these occasions. Geological and scientific expeditions are of small value as far as the discovery of payable mineral deposits is concerned in a little-known country. Expeditions of these kinds have an extensive number of objects and are too heavily equipped to be able to follow other than an arranged route from which short journeys can be made to conspicuous outcrops, mountains, or known deposits. Only on rare occasions have expeditions succeeded in locating payable ores. This is not to be won-

dered at as the object in view is to obtain knowledge which will be of geological and scientific value to the world in general. The discovery of payable propositions rests with individual prospectors. The right stamp of man was lacking amongst the German colonists. Possibly the inducements afforded by the Government influenced them to follow the more certain road to prosperity by settling on the land. The exploitation of the country has been done almost entirely by rough and ready prospectors from the Union who possessed great optimism and small wants. Burdened with but few tools, they went from river to river and hill to hill with the sole idea of finding a payable deposit, and ignored geological phenomena over which a more highly trained man might occupy his time. A case in point may be cited of two able geologists who were stationed for many years at Luderitzbucht by the late Administration without discovering a payable proposition. The finding of diamonds near the railway was made by a Cape boy. The minerals and precious stones so far discovered in the Protectorate are situated in the vicinity of the railways which were built without taking the mining possibilities into consideration, except in the case of the Otavi Mine. Copper was found at Khan, near the old railway line, marble and tin at Karibib, blue ground pipes near Gibeon, diamonds at Luderitzbucht. The finding of minerals near the railways may be taken to indicate that where facilities were afforded discoveries were made. Besides the deposits previously mentioned, a variety of minerals has been located throughout the territory, but in the majority of cases the prospector has merely registered the find with the Government, and has not done sufficient work to prove the value of the discovery. Minerals and metals that are actually being mined or have been mined since the occupation include diamonds, copper, tin, scheelite, and sulphur. The life of the diamond fields, a full description of which is given in Dr. P. A. Wagner's *Memoir on the Geology and Mineral Industry of South-West Africa*, may be estimated to average eight years on the pre-war production. Some of the small companies, however, will be worked out in two or three years, but the Koloniale Bergbau Gesellschaft and the Deutsche Diamanten Gesellschaft may maintain their production for fifteen years. The length of the life of the mines will depend on the price obtained for diamonds. If the present or enhanced values of diamonds are maintained the calculations, many of which were based on sales of 29s. a carat in 1912-13, will prove to be misleading.

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CAISSON ALLUVIAL DIAMOND RECOVERY.

Description of the Newly Designed Plant for Use on the Vaal River.

The invention of Mr. Fabian M. Cox, consisting of a pontoon with a caisson attached, is expected to solve the problem of recovering diamonds from the deep pools of the Vaal. Briefly the plant comprises a couple of pontoons, rigidly connected by decks, between which a roomy caisson or diving bell is sunk to the river bed. The caisson is connected by means of a tubular shaft to a chamber above the water level, and the whole is air-locked. In order to keep the caisson submerged, it is weighted with heavy iron ballast, while the upper chamber, above the water level, is similarly weighted by an outer concentric chamber or tank filled with water, which can be regulated as to quantity and adjusted to carry the necessary weight. Compressed air is forced into the interior of the upper, or air-lock chamber, the shaft and the bell, or caisson, and the river water being thus forced out below it is possible to carry on digging and loading operations conveniently. The gravel is hoisted up the shaft and delivered into a shoot, holding about a ton. When filled, it is discharged by a mechanism of double doors, which prevents the escape of compressed air from the interior of the various caisson compartments. Safety is provided for by the free communication of the bell with the upper or air-lock chamber through the shaft and ladder-way and by an easily opened manhole above. The following notes are taken from the provisional patent specification:—The present invention has reference to caissons or diving bells of the air-lock type, and in this instance is designed for the recovery of gold or precious stones from deep waters. The invention consists of providing a diving bell having a tubular shaft and air-lock with means of quick vertical adjustment through the agency of solid and liquid ballast and suitable guiding frame, and means of elevating minerals by (a) submerged pump, or (b) suitable hoist. The following is a description of apparatus constructed according to this invention, and in this instance it be presumed for diamond recovery. A metal cylinder or bell having a dome roof which is surmounted with a tubular shaft in sections to suit depth of water to be worked, is terminated by an air-lock chamber surrounded by a water ballast tank. The dome roof of the bell is provided with means of securing and at will releasing a quantity of solid ballast. The tubular shaft is furnished with external runners which engage in rollers or guides attached to the deck of a pontoon or raft which carries an engine, air compressor and centrifugal pump, and possibly plant for the treatment of the gravel or material recovered. The air-lock chamber is provided with the usual manhole door and equalizing valve, together with an air-lock shute for discharging gravel; a special door closing the entrance to the tubular shaft, which latter is furnished with ladder rungs and runners for skip way, operated by a hoist fixed in the

air-lock. The base of the shaft where it enters the bell is fitted with an air-tight door which may be used when it is required to lengthen the shaft. The bell is provided with collapsible seats attached to the wall for the accommodation of workers during lifting operations, and with a centrifugal pump or hydro ejector having a flexible suction by means of which the loosened gravel is deposited in the kibble or skip hoisted to air-lock or elevated direct above water level to the deck of the pontoon.

Method of Operation.—Sufficient solid ballast to partially submerge the bell is placed on the dome roof, water ballast is then pumped into the tank surrounding the air-lock in order to sink it and hold it securely on the river bed or sea bottom, and the gravel is elevated to the surface by pump or ejector direct, or hoisted to the air-lock and thence discharged through the air-lock shute projecting through the water ballast tank. The Bell or Caisson proper, as constructed by Messrs. Geo. Stott & Co., Johannesburg, is 15 ft. 0 in. in diameter, 5 ft. 0 in. high, and has a cone roof rising to 8 ft. 6 in.; the interior is fitted with electric light in a water-tight fitting, and has a telephone communicating to the air-lock and engine-room. A specially designed hydro ejector with a flexible suction is installed for clean-up purposes. The apex of the cone roof is surmounted with a M.S. collar-piece to which the various lengths of shaft are bolted. The shaft is 2 ft. 9 in. interior diameter, and is made in lengths varying from 5 ft. to 12 ft.; each length is furnished with ladder rungs and steel runners for skip, also with an air-pipe and 5 core armoured cable with G.M. plug couplings for electric light, telephone and signal bells. The air-lock is 6 ft. 6 in. diameter and 6 ft. 6 in. high; is fitted with the usual man-hole and shaft doors, equalizing and relief valves, and is placed inside the water ballast tank, which is 10 ft. 10 in. in diameter. Through the wall of the air-lock chamber and ballast tank a gravel chute projects at an angle of 45 deg.; this is closed at either end by air-lock doors, the outer one being of special construction fitted with a positive interlocking device which prevents its being opened until the inner door is closed. An Ingersoll air-hoist, operating a $\frac{1}{2}$ -ton skip raises the gravel from the caisson and tips into the shute which has a capacity of 1½ tons. From this shute the gravel is discharged into a bin on the deck of the pontoon, and thence elevated to a trommel, whence it is delivered to a gravitator. The pontoons, of which there are two, are 37 ft. x 10 ft. x 2 ft. 6 in., and are connected by platform decks 37 ft. x 10 ft. wide, thus forming a square in the centre of which is a 17 ft. x 17 ft. opening to admit of the caisson being raised for transit in shallow water. A heavy gantry standing on columns is rigged for the purpose of raising and lowering the caisson. The deck plant consists of a vertical boiler, Laval steam turbines, air-compressor and receiver. Centrifugal pump for filling water-ballast tank and a direct coupled lighting set with accumulator battery. The entire structure is of M.S., cast-iron being only employed for permanent ballast.

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A REVIEW OF THE MINING INDUSTRY.—II.

Points from the Report of the Secretary for Mines and Industries for 1918.

In the course of his annual report for 1918 the Secretary for Mines writes:—

Miners' Phthisis.—During the year under review, a further amendment of the Miners' Phthisis Acts was passed, postponing until 1st August, 1919, the award of the same amount of compensation for miners' phthisis, whether the beneficiary is in the primary or the secondary stage of the disease, and it further appropriated a sum not exceeding £40,000 in all from the Insurance Fund for the purpose of making awards in certain necessitous cases, the circumstances of which did not otherwise qualify the applicant under the Act for compensation. During the year, however, a further Commission was appointed to advise the Government in regard to the consolidation of the laws on this subject, and during the 1919 Session of Parliament a further Act was consolidated and was passed which, it is hoped, will be the final consolidation measure.

Trading on Mining Ground.—This question was again brought prominently before the Department during the year under review in connection with the native unrest and the boycotting of certain stores by the natives on the East Rand, and towards the end of the year a Departmental Committee was appointed to inquire into and report upon: (a) the desirability or otherwise of altering the system of native trading on the mines, whether by the establishment of co-operative stores or otherwise; (b) the desirability or otherwise of altering the present method of disposal of trading sites under the Trading on Mining Ground Regulation Act, 1910; (c) to what extent any such alteration is practicable and advisable. At the time of writing the committee had not submitted its report.

Administration of Mining Laws.—The administration of the mining laws of the Union was carried on with great difficulty during the year owing to shortness of staff, and the influenza epidemic towards the end of the year increased the difficulties in this connection.

AGRICULTURE ON PROCLAIMED LAND.

Good progress has been made on the small agricultural holdings on the Government farms Rondebult No. 16 and Finaalspan No. 3 under the administration of the Mining Commissioner, Boksburg. The settlement consists of thirty-four plots averaging 50 morgen each. The tenants have now been in occupation for several years and the population consists of white adults, 48; white children, 95; native adults, 150; native children, 64. The value of improvements effected during the period of occupation by the present tenants is estimated to be: Permanent buildings, fencing, etc., £11,000; movables (live stock, vehicles, implements, etc.), £11,500; or a total in the way of improvements of £22,500. A school for the white children has been established and is being conducted by a qualified teacher, who is the wife of one of the settlers. It may be of interest to observe that one-half of the tenants are of Dutch and the other half of British descent. Fourteen of the settlers are sufferers from miners' phthisis and of these ten are beneficiaries of the Phthisis Board. It is satisfactory that the owners of certain private proclaimed farms in the mining district of Boksburg are likely to establish similar schemes of small holdings under the empowering section of the Mineral Law Amendment Act of last year.

II.—GEOLOGICAL SURVEY.

Much of the time of the Geological Survey field staff has been taken up by special mineral survey work designed with a view to taking advantage of the conditions brought about by war to developing the base mineral resources of the Union. This work involved the examination of known occurrences of the following minerals: asbestos, mica, corundum, phosphates, limestones, and iron ore. One member of the staff was employed on work for the trigulation Department

for three and a half months. The construction of the geological map of the Union was thus very considerably interfered with. The areas in which noteworthy amounts of mapping were done were the Heidelberg district and the Tugela Valley. In the Heidelberg district the survey was carried out in much detail on account of the economic interest involved, and the chief results were: (1) the determination of an important strike-fault with southern downthrow separating the Witwatersrand beds near the town of Heidelberg from the Ventersdorp beds of the country round Balfour and the Witwatersrand beds south of it; (2) the tracing of the main divisions of the Rand beds as established on the Rand itself through the country north of the fault mentioned; (3) the finding of certain strata with distinctive characters in the beds below the Nigel (Main-Bird) quartzites, which may facilitate the recognition of horizons in more distant areas; (4) the effect of strike-faults in bringing about the variation in width of ground occupied by the beds between the Nigel horizon and the Kimberley-Elsburg beds near Heidelberg. The important points in the work in the Tugela basin were: (1) the mapping of the great Tugela fault of post-Karoo age; (2) the detailed mapping of the schist-limestone group of the Mfongosi Valley; (3) the location of a thrust-fault separating the schist-limestone group from the granite to the north; (4) an examination of the Insuzi beds containing conglomerates which were prospected some years ago. During the year Sheet No. 16 (Belfast) was printed and Memoirs on the Barberton district, asbestos within the Union, and limestone resources of the Union (Volume 1) were issued.

(To be continued.)

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(Single, Double and Treble)

"Homogene" BRAND Laminated.

"Viking" BRAND Launder Lining.

ABRIDGED PROSPECTUS.

The Mozambique Portland Cement Company, Limited.

(Registered under the Company Laws of the O.F.S., and also in the Province of Mozambique.)

REGISTERED CAPITAL - - - £350,000.

Divided into 350,000 Ordinary Shares of £1 each. 265,000 Shares are now offered for subscription AT PAR. Of these not less than 20,000 must be offered for a specified period to the Public of the Province of Mozambique.

DIRECTORS.

- A. O. KUFAL, Esq., of Bale & Greene, Solicitors, Pietermaritzburg.
 BRIG.-GENL. SIR DUNCAN MCKENZIE, C.B., K.C.M.G., D.S.O., V.D., Nottingham Road, Natal.
 W. H. MARTIN, Esq., of Hart, Martin & Harrison, Johannesburg.
 W. J. O'BRIEN, Esq., J.P., O.B.E., M.L.A., Chairman of City & Suburban Gold Mining Co., Ltd., Pietermaritzburg.
 D. A. THOMSON, Esq., Managing Director of Hale & Co., Ltd., Mayor of Bloemfontein.
 H. O'K. WEBBER, Esq., Director of the National Bank of South Africa, Ltd., Johannesburg.

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MESSRS. MAX COHN & ANDREWS, Meischke Buildings, Harrison Street, Johannesburg.

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SECRETARIES.

MESSRS. WM. G. HODGES & CO., Hill's Buildings, Maitland Street, Bloemfontein.

Mr. F. E. DAVIS, Exploration Buildings, Johannesburg.

OFFICES.

JOHANNESBURG: Exploration Buildings, Commissioner Street, Johannesburg.

BLOEMFONTEIN: Hill's Buildings, Maitland Street, Bloemfontein.

LOURENÇO MARQUES: 10, Trevesa da Fonte, Lourenço Marques.

OBJECTS OF THE COMPANY.

The Company has been formed primarily for the purpose of producing Portland Cement and other kindred productions.

With this object in view the Company has acquired the Concession granted by the Portuguese Government at Lisbon for the exclusive right to manufacture cement in the Province of Mozambique, as well as the freehold property "Salamanga," situate on the Maputo River, on which have been found high-quality deposits of lime and clay eminently suitable for the manufacture of cement.

The Concession aforementioned is for a period of ten years, but is renewable for a further ten years, and it also confers upon the holder the privilege of importing *duty free* all machinery, plant and other requisites for a cement factory.

"Salamanga" is a freehold farm, and approximately 350 acres in extent, and about 30 miles from Lourenço Marques. It is situate on the "Maputo," which is a tidal and navigable river all the year round, and affords cheap means of transport to and from Lourenço Marques.

The property has been examined, and numerous samples of limestone and clay have been taken therefrom by Mr. Thorburn, Mineralogist, on the instructions of Mr. Alex. Heymann, of Johannesburg. Three reports have been made dealing with the analyses of the limestone and clay and with the geological nature of the property, namely:—

(1) By Professor Wilkinson, M.A., F.C.S., Professor of Chemistry and Chemical Technology, School of Mines, Johannesburg, which includes analyses of samples of limestone and clay, and deals with its suitability for the manufacture of cement.

(2) By Mr. Alex. Heymann, M.Ch., M.Ph., M.A., which includes analyses of limestone, clay and water, and deals with the physical nature of the deposits, and refers in detail to methods and costs of working, etc.

(3) By Mr. Thorburn, dealing with the geological features of the property and estimating the quality of raw material available.

AS ALL THE NECESSARY RAW MATERIALS FOR THE MANUFACTURE OF CEMENT HAVE BEEN FOUND ON THE AFORESAID PROPERTY IN UNLIMITED QUANTITIES, THE COMPANY WILL BE ABLE TO PRODUCE THE HIGHEST CLASS OF PORTLAND CEMENT AT A PRICE WHICH WILL PRECLUDE COMPETITION.

The present demand for Cement in the Union of South Africa and Province of Mozambique far exceeds the supply, and many contemplated works cannot be proceeded with owing to the existing limited supply. There can be no doubt that there will also be an in-

creasing demand in the future for cement following the development of public and private enterprises. The Company will be most favourably situated in regard to supplying Cement to Mozambique and the Union coastal towns, as well as the East.

CEMENT COMPANIES OPERATING IN THE UNION ARE PAYING EXCEPTIONALLY HIGH DIVIDENDS.

Native labour is plentiful in the Province of Mozambique, is comparatively efficient, and cheaper than in the Union of South Africa.

It is proposed to erect a plant capable of manufacturing about 5,200 tons per month.

The present price of cement in the Union is 7s. per bag at the factory, but in order to show the prospects of the Company, the selling price of the cement to be manufactured has been placed at 6s. 3d. per bag of 188 lbs. nett at Lourenço Marques.

Taking the output at 60,000 tons per annum, the revenue of the Company will be £223,404 1s. 3d., while the total annual expenditure is estimated at £78,404 1s. 3d., leaving a profit of £145,000 0s. 0d. per annum, which is equal to a dividend of 40 per cent. on the registered capital of £350,000 0s. 0d.

Lime is already being manufactured on the property for mining and agricultural purposes, and it is the intention of the Company to continue and develop the production of this commodity. An immediate revenue will, therefore, accrue from this product.

The consideration payable for the aforesaid Concession and freehold property is £110,000, namely, £25,000 in cash and £85,000 in fully paid-up shares.

The Company bears the expenses of and incidental to its incorporation, but is not liable for the preliminary expenses incurred by the Vendors in procuring the Concession and freehold property in question, nor for the costs of the professional reports, analyses, and other investigations, all of which are borne by the Vendors.

A copy of the Memorandum and Articles of Association of the Company, as well as all contracts, can be inspected at the Company's offices, or information as to their contents may be obtained by written application to the Company's Secretaries.

Applications for shares should be made on the printed form below, or on the printed forms to be obtained from the Company's Bankers or Secretaries.

All applications must be accompanied by a remittance of 5s. for every share applied for, the remaining 15s. being payable as to 5s. on allotment and the balance by one or more calls, subject to at least thirty days' previous written notice, but shares may be paid for in full on application.

Where no allotment or an allotment of a lesser number of shares than that applied for is made, the amount or a rateable proportion of the amount remitted will be refunded free from any deduction.

Early application is advisable.

TO THE DIRECTORS.

THE MOZAMBIQUE PORTLAND CEMENT COMPANY, LIMITED.

P.O. Box 6677, Johannesburg.

Sirs,—

I hereby make application for Shares of £1 each in the above-named Company, and hand you my cheque for £..... being deposit of 5s. per Share,

being payment in full,

and request you to allot me that number of Shares in terms of the prospectus dated the 1st September, 1919, and of the Company's Memorandum and Articles of Association.

*And I agree to pay the balance due in respect of the said Shares as and when called upon by you in accordance with the said prospectus—that is to say, 5s. upon allotment and the balance of 10s. as and when required, but subject to 30 days' previous written notice.

I agree to accept allotment of any lesser number that may be allotted to me conditionally upon a refund to me in full of a rateable proportion of the payment hereby made.

I authorise you to register me as a holder of the said Shares.

Name in full

Occupation

Address

Ordinary signature

Date.....

*Delete if fully paid.

TRANSVAAL GOLD MINING RESULTS AT A GLANCE.

Crushing and Profit & Loss Returns for Six Months—Ore Reserves and Dividends Compiled from Chamber of Mines' Statements.

The figures in shillings and pence represent the rate per ton milled. Total Revenue includes yield from accumulations; which is, however, excluded from rate per ton. Profits shown are subject to Income and Special War Tax. Miners' Phthisis Contributions, etc.

AURORA WEST

Capital: £106,353 (10s. shares).

Ore Reserves: 242,200 tons 5·6 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	11,700	11,885	20 4	25 5	*2,994	5 1	
March ...	15,000	15,504	20 8	21 5	*470	0 7	
April ...	13,800	13,877	20 1	23 3	*2,229	3 3	
May ...	14,800	16,732	22 6	22 5	45	0 1	
June ...	12,500	13,159	21 1	26 3	*3,323	5 4	
July ...	13,000	13,695	21 1	26 7	*3,729	5 9	

* Loss.

BANTJES CONSOLIDATED.

Capital: £502,306.

Ore Reserves: 85,000 tons 6·3 dwts. Crushing suspended.

BRAKPAN MINES.

Capital: £850,000; issued £806,600.

Ore Reserves: 2,718,000 tons 8·7 dwts. Dividends, 1918: 32½ p.c.
June, 1919: 12½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	41,300	81,850	39 7	25 1	29,176	14 2	
March ...	51,500	95,103	36 10	24 7	30,724	11 11	
April ...	47,500	89,606	37 8	24 8	30,407	12 10	
May ...	48,800	120,287	49 3	24 10	30,503	12 6	
June ...	45,500	92,112	40 6	25 6	30,105	13 3	
July ...	49,300	93,960	38 1	26 6	27,559	11 2	

CITY DEEP.

Capital: £1,250,000.

Ore Reserves: 3,342,700 tons 9·6 dwts. Dividends, 1918: 27½ p.c.
June, 1919: 10 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	40,000	78,825	39 5	30 5	17,510	8 9	
March ...	50,000	100,034	40 0	27 9	29,368	11 9	
April ...	48,500	98,322	40 7	28 0	29,199	12 0	
May ...	50,000	98,896	39 7	28 5	27,487	11 0	
June ...	48,000	94,453	39 4	28 4	26,405	11 0	
July ...	55,000	108,109	39 4	27 8	30,772	11 2	

CITY AND SUBURBAN.

Capital: £1,360,000 (£4 shares).

Ore Reserves: 348,200 tons 7·8 dwts. Dividend, 1918: 1½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	13,947	24,437	34 9	40 10	*1,368	6 3	
March ...	16,159	25,474	29 1	38 2	*3,758	7 2	
April ...	17,343	28,765	32 8	35 6	*2,423	2 9	
May ...	18,270	32,410	35 6	35 0	76	0 1	
June ...	18,226	27,950	30 8	34 10	*1,096	1 6	
July ...	19,398	31,327	31 10	32 1	*239	0 3	

* Loss.

CONSOLIDATED LANGLAAGTE.

Capital: £950,000

Ore Reserves: 2,103,000 tons 6·2 dwts. Dividends, 1918: 5 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	41,000	49,414	23 11	19 9	8,870	4 4	
March ...	47,200	56,074	23 7	19 2	10,848	4 7	
April ...	45,000	55,547	24 6	19 10	10,839	4 10	
May ...	45,800	56,605	23 11	19 6	11,877	5 2	
June ...	43,200	54,382	25 0	19 8	11,780	5 5	
July ...	47,300	55,420	23 4	18 5	11,799	5 0	

CONSOLIDATED MAIN REEF.

Capital: £1,247,602.

Ore Reserves: 1,425,870 tons 7·3 dwts. Dividends, 1918: 3½ p.c.
June, 1919: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	41,610	67,199	31 10	28 9	6,417	3 1	
March ...	50,140	74,803	29 10	26 0	8,636	3 5	
April ...	47,300	75,185	31 11	28 1	7,753	3 3	
May ...	50,230	75,733	30 2	26 4	8,587	3 5	
June ...	47,000	72,985	31 1	27 3	8,050	3 5	
July ...	50,300	74,395	29 7	25 7	9,112	3 7	

CROWN MINES.

Capital: £940,106 (10s. shares).

Ore Reserves: 8,298,100 tons 6·4 dwts. Dividends, 1918: 20 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	124,000	183,948	29 6	27 5	12,970	2 1	
March ...	160,000	222,861	27 9	24 3	25,468	3 2	
April ...	158,000	219,786	27 10	23 5	32,107	4 1	
May ...	164,000	227,861	27 9	23 0	37,467	4 7	
June ...	168,000	234,993	27 11	22 3	44,538	5 4	
July ...	179,000	243,658	27 2	21 4	48,978	5 6	

DURBAN ROODEPOORT DEEP.

Capital: £440,000.

Ore Reserves: 1,078,500 tons 6·5 dwts. Dividend, 1918: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	25,000	37,563	30 1	28 4	1,834	1 6	
March ...	27,700	40,795	29 5	27 2	2,698	1 11	
April ...	25,200	35,481	28 0	27 11	*156	0 1	
May ...	24,100	35,490	29 5	29 9	*561	0 6	
June ...	18,400	29,020	31 6	36 11	*5,305	5 9	
July ...	11,700	11,511	19 8	63 1	*25,553	43 8	

* Loss.

EAST RAND PROPRIETARY MINES.

Capital: £2,445,897.

Ore Reserves: 2,268,000 tons 6·5 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	103,500	134,458	26 0	24 0	8,734	1 8	
March ...	112,000	150,004	26 9	25 1	8,030	1 5	
April ...	110,000	139,814	25 5	23 4	10,020	1 10	
May ...	110,000	141,313	25 8	24 8	6,079	1 1	
June ...	111,000	147,018	26 6	24 8	8,535	1 6	
July ...	125,000	151,007	24 2	22 5	10,083	1 7	

FERREIRA DEEP.

Capital: £980,000.

Ore Reserves: 932,400 tons 8·0 dwts. Dividends, 1918: 22½ p.c.
March, 1919: 7½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	31,700	49,690	30 8	26 7	6,962	4 5	
March ...	37,000	60,505	31 6	25 7	10,289	5 7	
April ...	32,300	56,941	35 3	25 11	14,367	8 11	
May ...	33,600	52,455	31 3	24 7	12,738	7 7	
June ...	33,000	50,994	30 11	24 0	11,053	6 8	
July ...	35,000	51,164	29 3	23 9	8,981	5 2	

GEDULD PROPRIETARY.

Capital: £1,150,000.

Ore Reserves: 2,510,000 tons 7·5 dwts. Dividends, 1918: 11½ p.c.
1919: Distribution of enemy shares.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	39,500	60,046	30 5	19 10	19,456	9 10	
March ...	43,500	63,554	29 3	19 2	20,363	9 4	
April ...	42,000	63,113	30 1	19 6	20,896	9 11	
May ...	43,000	65,989	30 8	20 10	20,394	9 6	
June ...	43,800	65,640	29 3	20 3	20,723	9 6	
July ...	43,700	65,500	30 0	20 2	21,117	9 8	

GELDENHUIS DEEP.

Capital: £585,753.

Ore Reserves: 1,549,600 tons 5·9 dwts. Dividends, 1918: 7½ p.c.
June, 1919: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	42,500	50,514	23 5	26 1	*5,489	2 7	
March ...	53,100	61,341	23 1	22 2	1,651	0 7	
April ...	47,500	54,447	22 11	24 6	*4,018	1 8	
May ...	49,500	58,368	23 7	22 10	1,137	0 6	
June ...	47,200	57,905	21 6	23 9	1,217	0 6	
July ...	51,100	58,525	22 11	21 4	3,634	1 5	

* Loss.

GOVERNMENT AREAS (MODDER).

Capital: £1,400,000.
Ore Reserves: 9,445,000 tons 8.0 dwts. Dividends, 1918: 27½ p.c.
June, 1919: 17½ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	101,000	179,658	35 7	21 9	69,594 13 9
March	114,000	199,546	34 5	21 0	79,659 14 0
April	116,000	204,448	35 0	20 8	84,479 14 7
May	125,000	218,788	34 5	20 2	92,762 14 10
June	118,500	204,956	34 6	19 9	87,463 14 9
July	122,000	212,119	34 9	19 9	91,425 15 0

GLYNN'S LYDENBURG.

Capital: £170,000.
Dividends, 1918: 16½ p.c. January, 1919: 2½ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
January	2,784	4,126	29 8	—	20 0 2
February	3,160	6,168	39 0	28 7	1,516 9 7
March	3,770	5,841	31 0	26 4	751 4 0
April	3,970	7,374	37 2	25 9	2,101 10 7
May	3,885	7,127	36 8	31 7	948 4 11
June	3,830	6,486	33 10	31 11	235 1 3
July	3,810	6,996	36 9	27 1	2,334 12 3

* Loss.

JUPITER.

Capital: £1,014,200.
Ore Reserves: 674,000 tons 5.98 dwts. Dividends, 1918: 1¼ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	22,100	21,310	22 0	23 3	*1,702 1 6
March	24,400	26,761	21 11	23 1	*1,774 1 5
April	21,200	23,953	22 7	25 8	*3,590 3 5
May	23,600	24,348	20 7	23 5	*3,585 3 0
June	22,300	24,190	21 8	23 11	*2,766 2 6
July	25,100	28,001	22 4	22 1	*72 0 1

* Loss.

KNIGHT CENTRAL.

Capital: £900,000.
Ore Reserves: 275,000 tons 6.9 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	20,000	28,957	26 8	27 8	429 0 5
March	19,100	25,639	26 10	29 2	*2,495 2 7
April	20,000	30,367	29 7	29 3	706 0 8
May	22,500	26,565	23 7	30 0	*7,483 6 8
June	21,700	26,765	24 7	30 4	*6,555 6 0
July	25,500	31,289	24 0	25 3	*1,273 1 0

* Loss.

KNIGHTS DEEP.

Capital: £743,526.
Ore Reserves: 1,671,000 tons 4.43 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	77,600	68,312	17 7	17 8	*1,014 0 3
March	88,200	76,175	17 3	16 11	608 0 2
April	82,900	71,451	17 3	17 3	*1,189 0 3
May	93,100	74,399	16 0	16 5	*3,180 0 8
June	95,000	77,496	16 4	15 4	1,611 0 4
July	95,900	77,224	15 10	15 6	1,298 0 3

* Loss.

LANGLAAGTE ESTATE.

Capital: £886,500.
Ore Reserves: 1,036,200 tons 6.9 dwts. Dividends, 1918: 12½ p.c.
June, 1919: 7½ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	38,160	48,917	25 8	20 1	10,506 5 6
March	42,000	55,131	26 3	20 6	12,005 5 9
April	40,000	52,332	25 10	21 2	10,037 5 0
May	42,200	53,407	25 4	21 0	9,025 4 3
June	40,900	49,295	24 1	20 2	8,080 4 0
July	42,000	50,280	23 11	20 10	6,575 3 2

LUIPAARDSVLEI ESTATE.

Capital: £172,012.
Ore Reserves: 645,000 tons 5.5 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	18,860	20,950	22 3	22 2	*230 0 3
March	21,000	20,687	19 8	21 6	*2,207 2 1
April	20,000	20,797	20 10	22 3	*1,598 1 7
May	20,850	22,581	21 8	20 11	*484 0 6
June	21,763	22,177	20 1	19 8	652 0 7
July	22,230	22,309	20 1	20 0	30 —

* Loss.

MEYER AND CHARLTON.

Capital: £200,000.
Dividends, 1918: 110 p.c. June, 1919, 50 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	11,625	33,986	58 6	24 11	19,045 32 9
March	14,000	39,368	56 3	23 3	22,508 32 9
April	13,640	40,082	58 9	23 5	23,510 34 6
May	14,450	40,574	56 2	23 1	23,306 32 3
June	14,030	40,803	58 2	23 9	23,505 33 6
July	15,000	41,084	54 9	22 7	23,501 31 4

MODDER "B."

Capital: £700,000.
Ore Reserves: 3,378,000 tons 9.2 dwts. Dividends, 1918: 82½ p.c.
June, 1919, 45 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	48,000	115,691	48 2	22 11	60,342 25 2
March	54,000	124,085	46 0	22 6	63,024 23 4
April	54,000	121,375	44 11	22 3	61,062 22 7
May	55,000	120,487	43 10	20 11	62,001 22 7
June	54,500	121,239	44 6	20 11	63,160 23 2
July	57,000	123,346	43 3	21 3	62,016 21 9

MODDER DEEP.

Capital: £500,000.
Ore Reserves: 3,450,000 tons 8.8 dwts. Dividends, 1918: 97½ p.c.
1919: 50 p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	39,700	83,128	41 11	16 9	47,148 23 9
March	42,800	89,100	41 8	17 7	51,154 23 11
April	41,100	89,245	43 5	18 1	51,818 25 3
May	44,200	93,170	42 2	17 7	53,955 24 5
June	41,500	93,807	45 3	18 2	55,771 26 11
July	43,500	95,842	43 11	17 9	56,958 26 2

NEW GOCH.

Capital: £550,000.
Ore Reserves: 111,670 tons 5.6 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	12,550	12,684	19 11	21 0	*513 0 10
March	15,500	14,200	17 6	19 0	*641 1 0
April	16,600	13,771	16 0	17 2	*580 0 8
May	16,700	13,631	15 9	17 5	*524 0 7
June	11,740	14,837	19 5	19 3	522 0 8
July	14,980	14,391	18 7	19 1	489 0 8

* Loss.

NEW HERIOT.

Capital: £115,000.
Ore Reserves: 223,420 tons 7.12 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	10,100	14,153	28 0	28 8	*495 1 0
March	11,190	16,813	30 1	27 7	1,167 2 1
April	10,610	14,850	28 0	29 0	*718 1 4
May	12,180	16,290	26 9	25 11	334 0 6
June	11,350	16,035	25 9	27 7	157 0 3
July	12,690	16,677	24 11	25 11	160 0 3

* Loss.

NEW KLEINFONTEIN.

Capital: £1,300,000.
Ore Reserves: 2,048,000 tons 5.78 dwts.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	53,500	64,120	24 0	23 4	712 0 3
March	66,000	77,920	23 7	23 1	598 0 2
April	57,900	72,262	25 0	24 2	1,053 0 4
May	59,480	71,557	24 1	24 7	*2,786 0 11
June	53,860	67,288	23 11	26 3	*4,894 1 10
July	51,600	69,115	26 9	27 11	*2,848 1 1

* Loss.

NEW MODDERFONTEIN.

Capital: £1,400,000 (£4 shares).
Ore Reserves: 9,000,000 tons 8.6 dwts. Dividends, 1918: 51½ p.c.
June, 1919: 32½ p.c.

	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £ s. d.
February	78,000	168,843	43 3	19 1	93,173 23 11
March	88,000	185,677	42 2	20 1	95,168 21 7
April	82,000	175,300	42 9	20 3	90,131 22 0
May	84,500	179,709	42 6	20 3	92,153 21 10
June	79,000	173,923	44 0	20 6	91,113 23 2
July	81,000	174,989	42 2	20 4	90,624 22 4

NEW PRIMROSE.

Capital: £325,000.

Ore Reserves: 65,690 tons 6.1 dwts. Dividends, June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	15,600	15,317	19 0	18 1	1,211	1 7	
March ...	18,000	16,502	18 4	16 11	1,280	1 5	
April ...	19,000	17,161	18 1	16 1	1,017	2 0	
May ...	20,300	18,652	17 11	16 0	2,423	2 5	
June ...	19,500	18,066	18 6	16 0	2,431	2 6	
July ...	19,000	18,639	19 7	17 1	2,413	2 6	

NEW UNIFIED.

Capital: £250,000.

Ore Reserves: 1,898,840 tons 6.5 dwts. Dividends, 1918: 10 p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	12,300	11,040	17 11	15 1	1,750	2 10	
March ...	13,700	12,318	17 2	15 0	2,060	3 0	
April ...	12,000	11,855	19 9	16 8	1,852	3 1	
May ...	12,200	12,020	19 9	16 8	1,844	3 0	
June ...	11,600	11,618	20 0	16 11	1,799	3 1	
July ...	12,000	12,017	20 0	17 0	1,810	3 0	

NOURSE MINES.

Capital: £827,821.

Ore Reserves: 1,513,600 tons 6.8 dwts. Dividends, 1918: 3½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	32,600	47,256	28 8	28 5	310	0 2	
March ...	40,600	57,442	28 4	26 7	3,175	1 7	
April ...	38,100	54,307	28 6	27 6	1,426	0 9	
May ...	40,900	56,210	27 2	25 10	2,582	1 3	
June ...	40,600	53,734	26 4	25 1	2,105	1 0	
July ...	41,400	54,137	26 2	24 10	2,244	1 1	

RANDFONTEIN CENTRAL.

Capital: £4,500,000.

Ore Reserves: 4,254,000 tons 6.8 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	135,000	153,190	22 5	21 7	7,603	1	
March ...	143,000	166,439	23 3	21 9	11,020	1 6	
April ...	138,000	162,705	23 7	22 3	9,149	1 4	
May ...	144,000	166,163	22 9	21 9	9,359	1 4	
June ...	150,000	171,120	22 9	21 3	11,795	1 7	
July ...	161,000	177,976	22 1	20 4	14,201	1 9	

ROBINSON.

Capital: £2,750,000 (£5 shares).

Ore Reserves: 322,000 tons. Dividends, 1918: 2½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	35,800	41,857	23 5	20 11	4,135	2 4	
March ...	40,000	43,709	21 10	20 0	3,259	1 8	
April ...	36,300	42,189	23 3	21 10	2,137	1 2	
May ...	40,900	42,035	20 7	19 11	2,453	1 2	
June ...	35,400	35,791	20 3	23 5	*5,747	3 3	
July ...	40,600	43,862	21 7	20 2	2,168	1 3	

ROBINSON DEEP.

Capital: 781,807 "B" shares, £1 each, and 500,000 "A" shares, 1s. each.

Ore Reserves: 1,632,000 tons 6.9 dwts. Dividends, 1918: 23 p.c. per "A" share.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	36,000	49,834	27 8	28 1	*1,313	0 9	
March ...	44,200	59,693	27 0	25 2	3,250	1 6	
April ...	45,300	62,578	27 8	25 2	4,826	2 6	
May ...	52,200	73,320	28 1	24 3	9,112	3 6	
June ...	50,000	67,679	27 1	24 5	5,668	2 3	
July ...	55,500	78,676	28 4	23 6	8,002	2 11	

* Loss.

ROODEPOORT UNITED.

Capital: £460,000.

Ore Reserves: 223,000 tons 6.02 dwts.

	Tons.	Revenue.		Cost.		Loss.	
		£	s. d.	£	s. d.	£	s. d.
February ...	23,300	22,797	19 1	20 7	*1,049	0 11	
March ...	25,100	22,088	17 5	20 0	*2,962	2 4	
April ...	24,200	23,231	19 0	20 2	*1,084	0 11	
May ...	23,800	21,931	18 4	20 7	*1,994	1 8	
June ...	23,100	22,267	19 2	20 9	*1,543	1 4	
July ...	24,400	22,721	18 6	20 4	*2,300	1 11	

* Loss.

ROSE DEEP.

Capital: £700,000.

Ore Reserves: 2,909,520 tons 5.3 dwts. Dividends, 1918: 17½ p.c.
June, 1919: 7½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	47,500	55,751	23 6	19 7	8,519	3 7	
March ...	54,000	60,505	22 5	18 7	9,570	3 7	
April ...	53,000	63,261	23 10	18 6	13,892	5 3	
May ...	51,500	64,396	25 0	19 2	11,257	5 6	
June ...	50,600	60,084	23 9	18 10	11,740	4 8	
July ...	56,000	65,054	28 3	17 8	15,088	5 5	

SIMMER AND JACK.

Capital: £3,000,000.

Ore Reserves: 1,538,000 tons 5.6 dwts. Dividend, 1918: 1¼ p.c.
June, 1919: 1¼ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	37,100	42,643	23 0	22 6	2,365	1 3	
March ...	44,700	48,059	21 6	22 2	*868	0 5	
April ...	46,800	46,589	19 11	21 0	*3,468	1 6	
May ...	54,800	59,859	21 7	19 5	5,228	1 11	
June ...	57,400	61,091	21 3	18 5	6,129	2 2	
July ...	58,400	60,755	20 10	18 4	6,431	2 2	

(e) In addition, £2,124 taken from reserve.

SIMMER DEEP.

Capital: £1,650,000.

Ore Reserves: 932,000 tons 5.02 dwts.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	37,900	42,622	22 6	23 10	*3,109	1 8	
March ...	40,600	41,645	20 6	24 2	*7,903	3 11	
April ...	38,600	39,309	20 4	25 0	*9,432	4 11	
May ...	43,700	42,333	19 5	22 9	*7,774	3 7	
June ...	43,600	45,820	21 0	22 2	*3,178	1 5	
July ...	45,200	51,160	22 8	22 4	*46	—	

* Loss.

SUB NIGEL.

Capital: £775,000.

Ore Reserves: 387,000 tons 10.3 dwts. Dividends, 1918: 11½ p.c.
June, 1919: 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
January ...	9,100	26,149	57 6	41 2	7,105	15 7	
February ...	8,500	24,399	56 6	37 10	7,956	18 9	
March ...	9,400	23,643	50 4	40 1	5,828	12 5	
May ...	10,300	25,359	49 3	40 7	1,121	8 0	
June ...	10,400	27,920	53 8	37 9	7,142	13 9	
July ...	11,000	28,511	51 10	38 10	6,775	12 4	

SPRINGS MINES.

Capital: Authorised. £1,500,000; registered. £1,300,000; issued. £1,153,500.

Ore Reserves: 2,256,062 tons 8.69 dwts. Dividends, 1918: 22½ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	35,300	68,022	38 6	24 3	25,271	14 4	
March ...	37,350	71,625	38 4	25 2	23,729	12 8	
April ...	34,940	67,721	37 9	25 6	22,771	13 0	
May ...	36,070	68,261	37 4	24 7	23,160	12 10	
June ...	33,500	63,559	37 11	25 5	20,203	12 1	
July ...	38,500	66,286	34 1	27 6	13,444	—	

TRANSVAAL G.M. ESTATES

Capital: £604,225.

Dividends, 1918: 6¼ p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	12,850	18,771	29 3	26 9	1,167	1 10	
March ...	15,910	25,588	32 2	24 9	5,310	6 8	
April ...	14,980	24,178	32 3	24 11	5,113	6 10	
May ...	16,830	24,777	29 5	22 8	5,555	6 7	
June ...	15,590	26,221	33 5	25 0	6,309	5 1	
July ...	15,540	26,621	34 3	25 8	7,004	9 0	

VAN RYN.

Capital: £500,000.

Ore Reserves: 1,347,816 tons 5.6 dwts. Dividends, 1918: 10 p.c.
1919: June, 5 p.c.

	Tons.	Revenue.		Cost.		Profit.	
		£	s. d.	£	s. d.	£	s. d.
February ...	31,100	31,599	20 4	17 6	4,140	2 8	
March ...	34,000	33,689	19 5	17 0	4,507	2 8	
April ...	35,150	33,956	18 7	16 7	4,514	2 7	
May ...	35,900	34,827	19 5	16 5	5,156	2 10	
June ...	35,250	34,933	17 3	16 7	6,988	3 11	
July ...	34,500	34,573	20 0	16 6	5,723	3 4	

VAN RYN DEEP.

Capital : £1,196,892.						
Ore Reserves : 2,445,759 tons 9.0 dwts. Dividends, 1918 : 45 p.c.						
June, 1919 : 22½ p.c.						
	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
February	43,350	94,992	41 5	21 11	47,536	21 11
March	50,000	105,632	42 0	20 10	53,456	21 5
April	47,400	103,560	43 8	21 2	53,288	22 6
May	49,600	103,492	41 9	20 3	53,225	21 6
June	46,700	99,966	42 10	20 6	52,024	22 3
July	48,300	107,990	44 9	21 1	57,179	23 8

VILLAGE DEEP.

Capital : £1,060,671.						
Ore Reserves : 2,327,200 tons 6.3 dwts. Dividends, 1918 : 3¾ p.c.						
June, 1919 : 7½ p.c.						
	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
February	45,800	59,629	26 0	24 7	2,580	1 2
March	54,000	69,166	25 7	24 6	2,089	0 9
April	43,400	63,176	29 1	27 10	2,129	1 0
May	47,200	68,405	29 0	26 2	5,844	2 6
June	38,900	61,949	31 10	30 2	2,501	1 3
July	43,200	64,761	30 0	27 8	4,400	2 0

VILLAGE MAIN REEF.

Capital : £472,000.						
Ore Reserves : 628,150 tons 7.1 dwts. Dividends, 1918 : 10 p.c.						
June, 1919 : 1 Village Deep share for 4 Village Main Reefs.						
	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
February	17,000	21,795	25 8	23 11	1,188	1 5
March	18,700	24,471	25 8	23 8	1,960	2 1
April	17,700	23,239	26 0	24 6	1,216	1 4
May	19,400	25,835	26 5	23 6	3,189	3 3
June	17,400	22,330	25 6	24 3	1,079	1 3
July	18,700	25,983	27 9	25 2	2,114	2 3

NOTICE.

In accordance with an Agreement with the British Directors of the German Agr. Comp., Ltd., and of the Liebig's Extract of Meat Coy., Ltd., of London, I have been released from my connection with said companies.

The Chemical Laboratory of Dr. Renz, which had been purchased by the German Agr. Comp., Ltd., per Agreement of the 6th June, 1919, has been transferred to me and is now my private property. I will conduct that business at Windhuk as an independent concern as from the 1st of September, 1919; all kinds of bacteriological and chemical experiments and research work will be undertaken.

I have secured the services of Mr. F. W. Kriesel, previously Chemical Expert of the Khan Copper Mine, as collaborator.

ROLF HARTIG,

Practising Vet. Surgeon,
Dr. Med. Vet., Zurich.

Windhuk, 15th August, 1919.

P.O. Box 3.

Telegraphic Address : " Farmlabor."

WEST RAND CONSOLIDATED.

Capital : £2,004,424.						
Ore Reserves : 1,208,300 tons 6.1 dwts.						
	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
February	28,600	33,362	23 2	23 1	111	0 1
March	32,800	37,886	23 1	22 2	1,295	0 9
April	32,000	38,421	23 9	23 1	1,159	0 9
May	33,120	39,053	23 7	22 7	1,408	0 10
June	31,620	37,588	23 9	22 7	2,537	1 0
July	33,260	39,555	23 8	22 9	1,446	0 10

WITWATERSRAND.

Capital : £475,000; issued, £469,625.						
Ore Reserves : 1,390,000 tons 6.0 dwts. Dividends, 1918 : 15 p.c.						
June, 1919 : 7½ p.c.						
	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
February	30,750	34,942	22 9	21 1	2,496	1 7
March	35,100	39,376	22 5	19 19	4,523	2 7
April	32,500	40,732	25 1	21 7	5,609	3 5
May	35,500	42,783	24 1	20 11	5,604	3 2
June	33,900	40,842	24 0	21 5	4,521	2 8
July	34,600	41,640	24 1	21 6	4,477	2 7

WITWATERSRAND DEEP.

Capital : £550,000.						
Ore Reserves : 953,665 tons 8.3 dwts.						
	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
February	27,300	32,928	24 1	26 1	*3,102	2 3
March	32,700	37,822	23 2	23 5	*998	0 7
April	30,450	37,049	24 1	24 7	*921	0 7
May	31,600	36,280	23 0	23 9	*1,979	1 3
June	29,900	36,339	24 4	24 0	42	—
July	30,300	36,874	24 4	25 3	*1,879	1 3

* Loss.

WOLHUTER.

Capital : £860,000.						
Dividends, 1918 : 6¼ p.c. April, 1919 : 2½ p.c.						
	Tons.	Revenue. £	s. d.	Cost. s. d.	Profit. £	s. d.
February	26,600	33,625	24 11	27 0	3,970	3 0
March	28,700	36,603	25 6	22 9	3,579	2 6
April	28,500	35,791	25 1	22 7	3,238	2 3
May	30,000	37,877	25 3	22 7	3,598	2 5
June	20,700	39,381	25 2	21 9	5,570	3 8
July	32,000	37,057	23 2	20 4	4,204	2 8

Companies Registered.

NOTICES OF INCREASE AND DECREASE OF CAPITAL.

- Geduld Proprietary Mines, Ltd., Johannesburg: increased from £1,150,000 to £1,152,000.
- Premier Paper Mills, Ltd., Johannesburg: increased from £10,000 to £20,000.
- Friedman and Foy, Ltd., Johannesburg: increased from £12,500 to £35,000.
- Rand Office and Shop Furnishing Co., Ltd., Johannesburg: increased from £1,000 to £4,000.
- The Pretoria Iron Mines, Ltd., Pretoria: increased from £75,000 to £100,000.
- Engineering Supplies, Ltd., Johannesburg: increased from £30,000 to £50,000.
- Rand Retreading and Vulcanizing Co., Ltd., Johannesburg: increased from £7,500 to £12,000.
- E. R. Monk & Co., Ltd., Johannesburg: increased from £1,700 to £2,300.
- H. W. Alkin and Co., Ltd., Johannesburg: increased from £1,000 to £60,000.

COMPANIES IN LIQUIDATION.

- Alfred F. Robinson, Ltd., Johannesburg: capital, £1,000.
- African Timber Co., Ltd., Johannesburg: capital, £1,500.
- British South African Commercial Agencies, Ltd., Johannesburg: capital, £1,000.
- S.A. Caustic, Ltd., Johannesburg: capital, £2,000.
- The Weekly Mirror, Ltd., Johannesburg: capital, £100.
- Springfield Broomworks, Ltd., Johannesburg: capital, £1,500.
- Farmers Association (Heidelberg), Ltd., Heidelberg: capital, £1,000.

MODDER EAST DEVELOPMENT.

Points from the Technical Reports—Many Encouraging Features.

In the absence of Mr. H. Stuart Martin on leave, Mr. Hans Meyer endorses the report of the Acting Manager, Mr. W. C. Coe, which describes the work done on the mine for the year ended June 30th, 1919. The following are the results obtained from development since the inception of the company to June 30th, 1919:—No. 1 shaft (Cloverfield): Footage advanced, 21,430; footage sampled on reef, 12,034; reef width, 19 inches; value, 16.4 dwts. No. 2 shaft: Footage advanced, 60; footage sampled on reef, 60; reef width, 34 inches; value, 5.0 dwts. No. 3 shaft: Footage advanced, 1,820; footage sampled on reef, 850; reef width, 24 inches; value, 9.6 dwts. It will be noticed that the greater part of the work done has been confined to the Cloverfield section, and on a basis of linear footage for that section the percentage of payable development to date has been 47 per cent., of 26.8 dwts. value over 19 inches, equivalent to 509 inch-dwts. In No. 3 shaft the percentage of payability was 61 per cent., disclosing 29 inches of 10.2 dwts. value, or 295 inch-dwts. During the current year, now that both No. 2 and No. 3 shafts have reached the reef, a considerable amount of work will be possible in widely separated areas and much information will be gained as to the general possibilities of the mine. The more encouraging features of the development position to which attention may be directed are: (1) The promising disclosures in No. 3 shaft south. (2) The exposure of a body of reef of good width in No. 2 shaft. (3) The high grade ore on the 18th level west of the main dyke. (4) The appearance and value of the reef on the 20th, 21st and 22nd levels, as well as that disclosed in the deepest part of No. 1 incline. (5) The satisfactory ore reserve position at this early date. The ore reserve position is estimated at 850,000 tons of 8 dwts. value over stopping widths averaging 55 inches. The development operations that will be undertaken during the coming year will place the mine in a position warranting early milling operations on a fair scale. The large development footage accomplished during the past year from a limited number of points of attack reflects great credit on the management and employees.

The Acting Manager, Mr. W. C. Coe, reports:—No. 1 shaft (Cloverfield): The total development work at this shaft comprised: Drives, 5,365 ft.; main haulage raises, 3,406 ft.; inclines, 1,609 ft.; winzes and raises, 3,848 ft.; crosscuts and sundry, 637 ft.; total, 14,865 ft. The reef disclosures for the year averaged 16.2 dwts. over 19 inches (308 inch-dwts.) for a sampled distance of 9,728 feet. Construction work was limited to the erection of an additional compressor. The two main haulage raises have made good progress during the year; the distance remaining to connect with No. shaft is 2,400 feet, which will be accomplished during the coming 12 months. No. 2 shaft: This shaft was sunk 718 ft. to a total depth of 1,218 ft., the length of walling being 737 ft. The rate of sinking was seriously affected by the large quantity of water met with at a depth of between 900 and 1,000 ft. The reef was intersected at 1,160 ft., and had an average value of 6.7 dwts. over 30 in. A station having been cut on what will be known as the 11th level, driving will commence as soon as the sinking equipment is replaced by permanent hoisting arrangements. No. 3 shaft: Sinking was continued in dyke for 260 ft. to a total depth of 818 ft., and walled throughout. At a depth of 790 ft. crosscutting through the dyke exposed its width of 400 ft. Driving has been carried on both north and south, and the reef disclosed has been payable on the south and unpayable on the north side. The work done at this shaft has, therefore, consisted of: Sinking, 260 ft.; driving, 868 ft.; crosscutting, 867 ft.; winzing, 60 ft.; sundry, 25 ft.; total, 2,080 ft. The average reef disclosures for 850 ft. sampled have been 9.6 dwts. over 24 ins. The main connection between this shaft and No. 2 has been commenced. Rand Klip: No underground operations have been carried out on this section of the property. Modderfontein B.

Drive: 457 ft. of driving, 10 ft. of raising and 213 ft. of diamond drilling was done by the Modderfontein B. Gold Mines, Ltd., on this company's behalf. General: The tendency of values has improved each quarter of the year, as shown by the following: 1st quarter: Footage sampled, 2,637; inch-dwts., 262. 2nd quarter: Footage sampled, 2,306; inch-dwts., 276. 3rd quarter: Footage sampled, 2,240; inch-dwts., 330. 4th quarter: Footage sampled, 3,455; inch-dwts., 344. The average cost of development for the year was £9 2s. per ft. The average number of white men employed was 166, and of natives 1,001. Health: The influenza scourge disorganised work during October, 1918; apart from this the general health of employees has been good. Accidents: Three natives met with fatal accidents during the year. It may be mentioned that No. 3 shaft, in spite of dangerous conditions, was sunk from the surface to the bottom without either a fatal accident or one resulting in serious injury.

PERSONAL.

Capt. Travers, of the Armstrong Whitworth Co., is on a visit to the Rand.

* * * *

Mr. Douglas A. Tullis, after three years' service in France, has returned to the Rand.

* * * *

Representatives of the First National City Bank of New York have been on a visit to the Rand this week, studying prospects and possibilities.

* * * *

The death occurred last week, under painfully sudden circumstances, of Mr. Frank Simon, General Manager of the Tweefontein United Collieries. Mr. Simon was one of the pioneer colliery managers of this country and his death will be regretted by a wide circle of friends.

* * * *

Mr. Littlejohn Phillip, who recently made a tour of the Union with a view to advising the Government in regard to the erection of grain elevators, will arrive at Beira during September on a similar errand and conduct investigations as to the desirability of erecting grain elevators at Beira and in various parts of the Rhodesian and Mozambique Company's territories.

* * * *

The list of certificates issued by the Mines Department for the month ending 31st August, 1919, is as follows: Mine Overseers (Metalliferous): J. Allenberg, C. A. B. Arnold, T. I. Berry, W. Boase, T. Collins (vertical shaft sinking only), J. H. A. Diering, D. C. Edington, R. C. A. Edwardes, J. C. Stewart; (Coal): R. Archibald. Mine Surveyors: H. W. Barlow, H. C. Barlow, A. T. Gates, J. E. Gudmundson, W. R. Hill.

Notices or advertisements of appointments vacant on the mines or elsewhere, so long as the employment will be first offered to a returned soldier, will be published free of charge in the S.A. Mining Journal. In order to assist the mine secretaries to make known any vacancy for a returned soldier, a free copy will be sent weekly to every mine secretary who forwards his address to this office.

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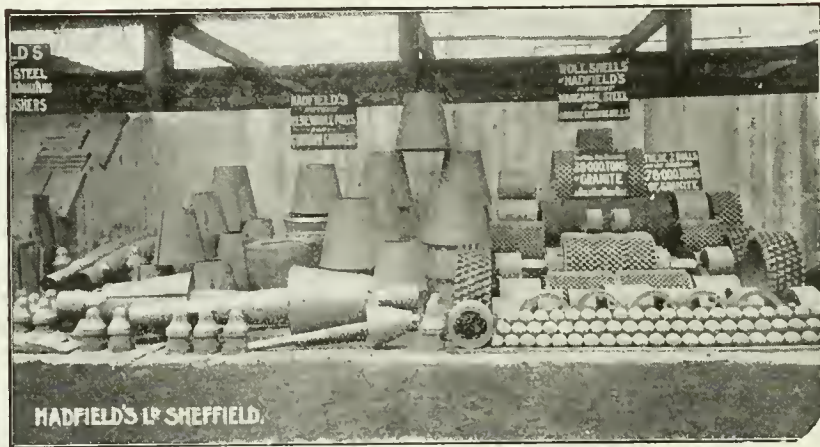
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Salisbury Agents:

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Angwa Street.

Natal Agents:

THOS. BARLOW & SONS,
Smith Street, Durban.

THE WEEK IN THE SHAREMARKET.

A Broadening Tendency—A Better Tone—Springs and State Mines Advance—Modder Easts Firm

The market has been very firm this week with a better tone and a broadening tendency. Stocks of the "C.M.S." group have been active, and State Areas have been in better demand. Modder Easts continue to be the favourite counter at improving prices, but the whole Far East Rand group have been bought. Fluctuations for the week are as follows:

	Fri., 29th.	Mon., 1st.	Tues., 2nd.	Wed., 3rd.	Thurs., 4th.
African Farms	14 0	14 0*	13 9*	13 9*	14 0*
Anglo-Amer. Corp.	26 6*	26 6*	26 6*	26 6*	27 0
Apex Mines	7 3*	—	7 0*	—	7 0*
Aurora Wests	9 6†	8 6*	—	8 0*	8 0*
Bantjes Consolidated	3 0*	3 0*	3 0*	3 0*	3 0*
Brakpan Mines	68 0	68 0*	68 6*	68 0*	—
Brick & Potteries	—	4 6*	4 6*	4 6*	4 6*
British South Africa	—	—	22 6	22 6†	22 6†
Bushveld Tins	2 2	2 0*	2 2	2 3	2 0*
Cassel Coals	30 0*	30 0*	32 6*	32 6*	32 6*
City & Suburbans	7 6	7 3	7 0*	7 0*	7 3
City Deeps	56 0*	56 0*	56 0*	58 0*	58 0*
Clydesdale Collieries	23 6*	23 6*	24 3*	25 0	24 6*
Con. Investments	30 0*	30 0*	30 0*	30 0*	—
Con. Langlaagtes	18 6*	18 6*	19 0*	19 4*	19 6*
Con. Main Reefs	11 3	11 0*	11 10*	12 0	12 9
Con. Mines Selection	—	25 3*	25 6*	25 6	25 0*
Coronation Freeholds	2 0	1 11*	1 11*	1 11	2 1*
Coronation Syndicates	—	3 6*	3 6*	3 6*	4 6
Crown Diamonds	8 0	8 4½	9 0	9 0	9 0
Crown Mines	—	—	47 6*	47 6*	—
Daggafontein Mines	23 3	24 6	23 9	23 9	24 3
East Rand Coals	2 10*	3 0†	2 11	3 0	2 9*
East Rand Deeps	0 10*	—	0 10	—	0 10*
E.R. Minings	20 9	21 0*	22 0	23 0*	23 0*
East Rand Props.	5 11*	5 9*	5 6*	5 9*	5 9*
East Rand Debentures	£65*	—	£65*	£70†	£65*
Eastern Golds	1 3*	1 3*	1 3*	—	—
Ferreira Deeps	—	—	—	—	6 3*
Frank Smith Diamonds	5 5	5 5	5 4*	5 3	5 4
Geduld Props.	51 0	51 6	50 0	51 3	50 6
Geldenhuis Deep	—	6 6*	6 6*	7 0*	7 6*
Ginsbergs	—	—	1 9*	1 0*	1 9*
Glencairns	—	1 0*	1 3*	1 0*	1 3*
Glencoe Collieries	—	6 0*	6 0*	6 0*	6 0*
Glynn's Lydenburgs	18 6	18 0*	18 0*	18 1*	19 0†
Government Areas	90 6	90 6	91 6	93 0	93 0
Hume Pipes	27 0*	27 6	27 9	27 9*	28 3
Jhb. Bd. of Executors	—	32 6*	32 6*	32 6*	32 6*
Jupiters	—	3 6*	3 9*	4 0*	4 0*
Klerksdorp Props.	1 6*	1 6*	1 6*	1 6*	1 6*
Knight Centrals	7 2†	6 9*	6 6	6 9	6 7
Knights Deeps	7 9*	7 9*	8 0*	8 0†	10 0†
Lace Props.	19 0†	19 0†	19 0†	—	19 3*
Leeuport Tins	28 9	28 0	27 9	27 6	29 3
Laipdaarsvlei Est.	2 6*	2 6*	3 0*	—	—
Lydenburg Farms	8 5*	8 4	8 4*	8 4*	8 4
Meyer & Charltons	—	—	86 0†	—	—
Middelvlei Est.	2 6	2 0*	2 6†	2 6†	2 6†
Modder B's	168 0	168 0*	169 0	171 0†	169 0
Modder Deep	168 0*	170 0†	168 0	169 0†	—
Modder Easts	27 4½	27 3	27 9	28 0	28 6
Do. Options (3 years)	8 9	8 9*	9 1	9 1	9 2
Do. Options (4 years)	10 7	11 0	11 4½	11 3	11 5
Natal Navigation Col.	—	21 0*	21 0*	23 6*	24 0*
National Banks	—	£14½	—	£15†	—
New Boksburgs	2 0†	2 0†	—	1 6†	—
New Eland Diamonds	27 0*	27 0*	26 0*	29 6†	27 0
New Era Cons.	10 9	10 9*	11 3	11 0*	11 0*
New Geduld Deeps	5 3	5 5	5 6	5 7	5 8
New Heriots	10 0†	9 0†	9 0†	9 6†	9 6
New Kleinfonteins	10 6	10 3*	10 9*	11 0	11 6
New Modderfontein	£27½	£27*	£27½*	£27½*	£27½
New Primrose	3 0*	—	—	2 6*	—
New Unifeds	—	3 0*	—	3 0*	3 3*
New State Areas	28 6	29 0	28 6*	28 6*	29 0
Nigels	6 0*	7 0*	—	—	—
Nourse Mines	12 9	—	12 3*	13 0	13 6†
Premier Preferreds	—	155 0†	155 0†	155 0†	—
Pretoria Cements	82 6	80 0*	81 0*	84 0	85 0*
Princess Estates	2 3*	2 2*	2 4*	2 4*	2 0*
Rand Collieries	3 3*	3 3*	3 3*	3 4*	3 3*
Rand Nudens	1 10*	1 10	1 10*	1 10*	1 10*
Rand Select. Corp.	72 6*	—	73 6*	74 0*	75 0*
Randfontein Deeps	5 3	5 9	6 0†	5 10*	5 11*
Randfontein Est.	18 0	18 3	18 6	19 6	19 9
Roberts Victors	11 6*	11 9*	12 0*	12 0*	12 6*
Rooibergs	6 6	6 3*	6 3*	6 3*	6 1*

*Buyers. †Sellers. AEx London. BOdd lots

	Fri., 29th.	Mon., 1st.	Tues., 2nd.	Wed., 3rd.	Thurs., 4th.
Roodpoort Uniteds	—	3 0*	—	—	—
Ryan Nigels	3 9*	3 9*	3 9*	3 9*	3 9*
Shebas	2 6†	2 0*	2 0*	2 6†	2 6†
Simmer & Jacks	3 0*	—	—	—	—
Simmer Deeps	2 3	2 3	2 3	2 0*	2 0*
S.A. Breweries	35 0*	35 0*	35 0*	35 0*	35 0*
S.A. Lands	6 1*	6 0*	6 0	6 0*	6 0*
Springs Mines	53 0	52 0	53 0*	53 0*	54 6
Sub Nigels	22 3	21 6*	21 9	21 9	21 9*
Swaziland Tins	18 0†	—	18 0†	14 0*	18 0†
S. Van Ryn	9 3	9 0	9 0	9 0*	8 11
S.A. Alkali	26 0	26 0†	23 0*	23 0*	—
Trans. G.M. Est.	13 3	13 3	—	—	13 3*
Tudors	0 9*	0 9*	—	1 1*	1 1*
Tweefontein Col.	25 0*	25 0*	—	25 0*	25 0*
Union 5 per cent.	£104*	£104½	£104½	£104*	£104
Van Ryn Deeps	75 3	75 6	75 3*	75 0	75 6*
Van Dyks	2 3*	2 3*	2 3*	—	2 3*
Village Deeps	15 6†	15 0	14 9*	14 3	15 0†
Welgedachts	30 0†	30 0†	30 0†	—	30 0†
West Rand Cons.	—	4 9*	4 6*	4 6*	—
Western Rand Estates	5 3*	5 9	5 6	5 6*	5 9†
Witbank Collieries	63 9*	—	—	—	—
Witwatersrand	19 0†	17 0*	17 0*	19 0	17 0*
Witwatersrand Deeps	12 6*	13 3*	13 6*	13 3*	14 0†
Wit. Townships	31 0†	31 0†	31 0†	31 0†	31 0†
Wolhuters	3 0	3 0*	3 1*	3 3*	3 5
West Springs	25 0	24 9	24 9*	24 9	25 6
Do. Options	7 4	7 3	7 1*	7 2*	7 9*
Zaaiplaats Tins	7 8	7 9	7 8	7 7	7 4

Agents Wanted in South Africa for American Manufacturers.

We have received a great many enquiries from American manufacturers desirous of appointing agents in this country to handle their products. The goods specially mentioned are electric welding machines, hollow set screws, unbreakable steel shaft hangers, high speed steel, agricultural machinery, spades, picks and shovels, timber, sheet packing, resistance and non-corrosive rods and wires, tractors, power hammers, milled cap screws, etc. Will any firms or individuals in the Union, Rhodesia or adjoining Protectorates, wishing to handle these lines, kindly communicate by letter with the Managing Director of this Journal, giving necessary references?

* * * *

Lomah (Rhodesia) Exploration.

The report of this company for the year to February 28 last states:—Mapeke Mines, Ltd. (Lomagundi District).—The Anvil gold mining claims owned by the above-named company have recently been leased on tribute, and development work has commenced. The company's holding in the Mapeke Mines, Ltd., is 88,500 shares of 10s. each fully paid. Kambanje Mines (Enterprise District).—An agreement has now been completed under which additional working capital to the extent of £10,000 is available to carry on further development at the Kambanje gold mining claims, on terms which the Lomah board consider satisfactory. A new mine manager with considerable experience in mining in Rhodesia has been engaged by the board to take charge of operations, and is now on his way to the mine. Development work has now been resumed by the Gold Fields Rhodesian Development Company on the adjoining property (owned by the Planet-Areturus Gold Mines, Ltd.), including the erection of an ore reduction plant and the construction of a branch line to connect up those mines with the main railway system. The company's interests have been fully preserved during the period of the war, and during the past few months progress has been made which has secured the resumption of work on both the company's interests, whilst 50 additional mining claims in the Enterprise district have been acquired. The future outlook in Rhodesia under normal conditions undoubtedly offers favourable prospects for active development work.

VACANCY FOR CHIEF INSPECTOR OF EXPLOSIVES

Applications are invited for appointment to the above-mentioned post on the establishment of the Department of Mines and Industries, with headquarters in Johannesburg. The commencing salary is £850 per annum, and rises, subject to satisfactory service, by annual increments of £30 to £1,100 per annum, plus the relative local allowance. Transport and subsistence allowances will be payable as provided by the Public Service Regulations.

A knowledge of both official languages will be required, and in the event of the successful applicant not possessing the necessary knowledge of one or other of such languages, he will be required to acquire a working knowledge thereof within a reasonable period.

The successful applicant will be required to serve for a period of twelve months on probation, and to furnish satisfactory certificates of birth and health.

Applications, supported by particulars of qualifications, age and experience, and copies of testimonials should reach the undersigned not later than the 30th November, 1919.

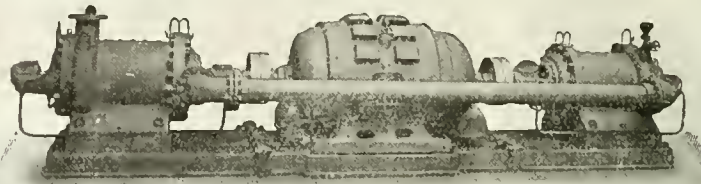
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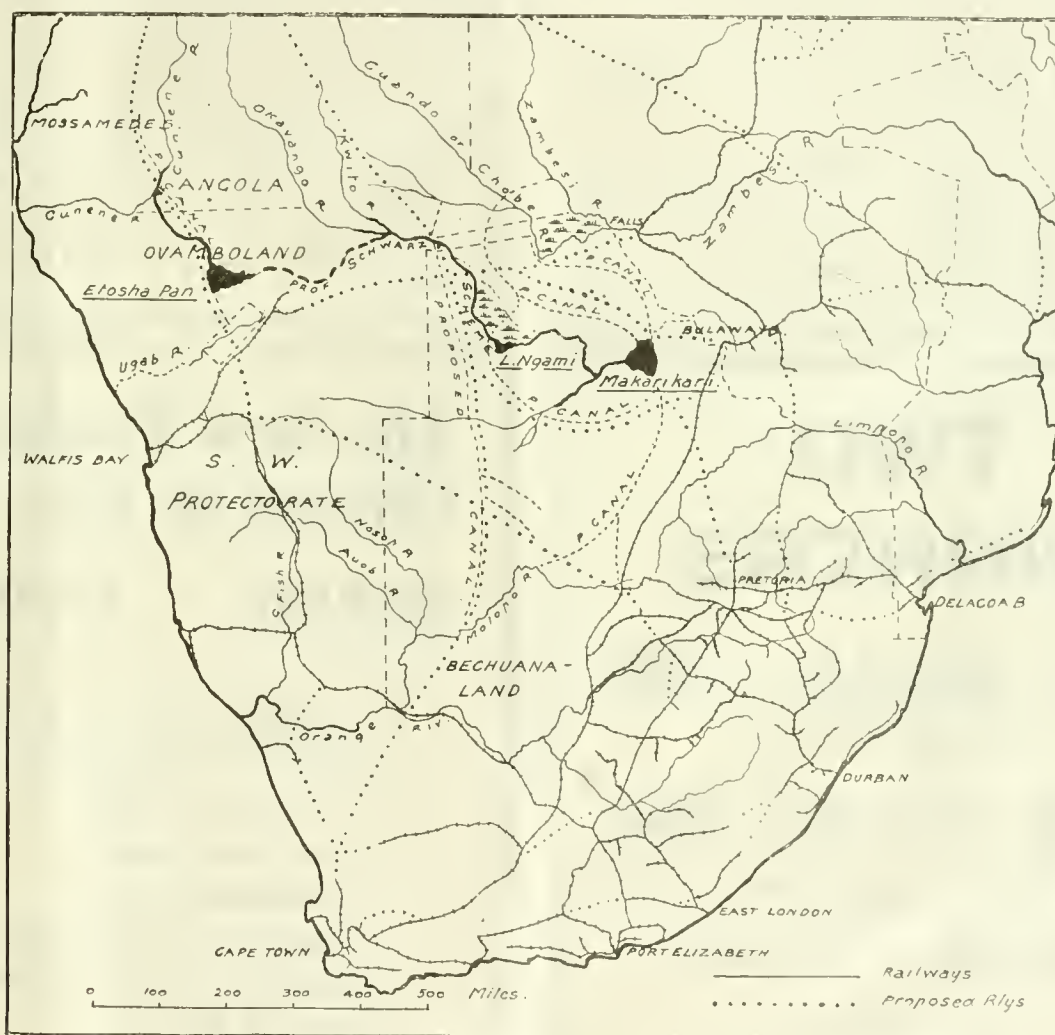
ENGINEERING SECTION.

THE ENGINEERING SIDE OF THE KALAHARI IRRIGATION SCHEME.

A Difference of Scientific Opinion—Important Economic and Political Results to be Attained.

The accompanying map will serve to illustrate the proposals for the irrigation of the Kalahari Desert which have been made by Professor E. H. L. Schwarz, of the Rhodes University College, Grahamstown, and Mr. August Karlson, of the Union Department of Irrigation. Although both are emphatic upon the vast benefits to be derived from the scheme, both with regard to the improvement of the climatic conditions of South Africa and the providing of enormous areas for cultivation by a largely increased white

the north of the Molopo in one direction and into the country between Ovamboland and the S.W. Protectorate in the other, are the main channels where the rainfall of Angola may be gathered for the renewed invigoration of an area that is now an arid waste. The prime necessity is to increase or, rather, to stimulate a rainfall over this area by means of a supply of moisture to the atmosphere above it. This can be done by irrigation. Professor Schwarz believes that by bringing the Angola rivers down their old



IRRIGATION SCHEMES PROPOSED BY PROFESSOR SCHWARZ AND MR. AUGUST KARLSON.

population, there is considerable difference of opinion with respect to the way in which the undertaking should be carried out. The sources of all the water needed for the purpose are to be found in the Cunene river, which has, during recent times, made a short cut for itself to the ocean, and the Okavango, Quito, Chobe and other streams which take their rise in the wide watershed of the Angola highlands. The Zambesi, to some extent, may be made to contribute to the supply. But the other rivers which at one time flowed into the great expanse of the Kalahari Desert and filled a lake which overflowed over the high ground to

channels into the Etosha Pan, and thence to Lake Ngami and the great Makarikari depression, and by forcing the Chobe river back along its former course through the swamps to Lake Ngami, the desired end can be attained. The overflow from the Makarikari to the south-west would, he thinks, find its way by two deviating routes to the Molopo, and thus fertilising streams would once more provide facilities for agriculture, and would at the same time increase the humidity of the atmosphere. Mr. Karlson, on the other hand, is of opinion that so much water would be lost in the process by evaporation and seepage into the miles and miles

of sandy desert through which the waters would pass that the desired end would be prevented long before the waters reached the Kalahari. He advises that canals should be constructed on sound irrigation lines, and the direction his canals would take are indicated on the map. The Cunene river, dammed at the point where it tends round to the west, would be conveyed to the country at the head of the Ugab river, where it would irrigate a large tract of fertile land; while the other streams would be led, as shown, directly into the Kalahari, and would water a region where some 1,200,000 whites and 200,000 natives could be engaged in agricultural pursuits of a profitable kind. The cost of such an undertaking, he considers, would not be more than about £20 per acre of irrigated land, or less than the figure at which comparatively small and relatively unimportant areas are dealt with in the Union. The work would, he says, not only provide for a great white population, and thus redress the dangerous want of balance between the races, but it would give employment, even in its earlier stages, for a great number of engineers who are preparing, in the schools of South Africa, for a career which will probably have to be looked for in some other country. From all points of view the Kalahari irrigation scheme is one of the greatest that has ever been conceived, and in view of all that is expected from its achievement it is to be hoped that the Government of the Union will take the project into earnest consideration. The map shows proposed lines of railway which Mr. Karlson believes will suggest themselves as economically necessary sooner or later, and others which are obvious extensions of already completed constructions.

The Prussian railway administration is about to commence experimenting with oil-fired locomotives, possibly fitted with Diesel engines, and used on electrified sections of the system, thus relieving some of the load coming on to the power stations. These oil engines will use by-products from the railway generating stations, and their number, forming

about one-fifth of the total locomotive contingent, will thus be available for war purposes where trains have to be hauled over enemy tracks which are not yet electrified. In addition to the Diesel engines and electric power-transmission to the live axles, which have been proposed, important work is now in progress for the development of oil locomotives with gas turbines and electric power transmission. The use of single-phase a.c. at 16 $\frac{2}{3}$ cycles per sec. and 15,000 volts line-voltage has been agreed upon between the railway administrations of Baden, Bavaria, and Prussia. It is thought that Saxony and the other States will also come into line unless the proposed unification of the railway systems of Germany renders this superfluous. Although the work necessary to introduce electric traction on to the lines Magdeburg-Leipzig-Halle and the Silesian Mountain Railway was interrupted by the war, the Prussian State railways have already carried out trials with new types of locomotives of capacity up to 3,000 h.p. The results of these trials show that the number of fundamental types can be restricted to three or four.—From the *S.A. Engineer and Electrical Review*.

Reuter's Agency is informed that the United States Shipping Board is negotiating the sale of its wooden vessels and steamers. These vessels are from 3,500 to 4,700 tons dead-weight each. The Shipping Board is not in a position to name the exact price at which these vessels can be purchased, but recent sales in America would indicate that 100 dollars per dead-weight ton on the basis of cash payment, 110 dollars per dead-weight ton on the basis of 50 per cent. cash on delivery, balance in 18 months, and 123 dollars per dead-weight ton on the basis of 25 per cent. cash on delivery, balance within three years, would be favourably considered. Further details, together with copies of specifications and blue prints, may be seen at the American Consulate-General, Capetown.

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TRADE AND INDUSTRIES SECTION.

THE WEEK IN THE MINING MATERIAL AND ENGINEERING TRADES.

Commencement of the Great Trade War—European, American and Canadian Competition—Timber and Building Materials—Commercial Exchange—Electrical Goods.

THE GREAT TRADE WAR commenced on Monday, September 1st, as all the world was free to enter the British markets, with only a short list of goods standing in the way. This naturally includes Germany, which has evidently, for some time past, been preparing for the great day of trade emancipation. According to a *Star* telegram, the serious thing about the situation is that owing to the heavy fall in the value of the mark German manufacturers can put goods on the British market at prices below the actual cost of manufacture in Britain. As an example of the operation of the rate of exchange, a piano dealer said that a piano equal to one costing £135 in London could be purchased from Germany for £35. The Germans have been using the post for small fancy goods samples, curling pins and hair pins at such very low quotations that the oversea department of the Board of Trade have secured samples, which are being shown for public inspection. There is also a scare in the British toy market, and it is feared that toys will come from Germany in endless profusion, and it is anticipated that if something is not done a large number of British toymaking concerns will be compelled to go out of business. Hopes are centred on the action of Sir Auckland Geddes, who can re-impose restrictions, pending legislation, if it is shown that German prices are so cheap as to injure British industry, and he is going to receive a deputation from the toy makers in regard to the matter. The manager of one of the biggest firms of toy dealers in London says: "In my view the Germans will penetrate our markets and nothing can keep them out." At another big West End house it was admitted "We have had our buyers in Germany for the past six weeks, and big prospective purchases have been made." In addition to these signs of the times, Reuter's cable states that the Peninsular and Oriental, British India and Welland lines announce that their vessels will load at Hamburg and Bremen. This latter message interferes with some of our most cherished notions, especially during some of the dark days of the war. But the war is finished and the world with its preconceived notions has to reconsider the position, and that position is if these British ships had not stepped into the breach and so carried the goods from any and every European port, the Americans with their big mercantile fleet, as compared with pre-war days, would have stepped in, naturally in friendly rivalry, and scooped the pools, to say nothing also of the Japanese ships. The British owners must be congratulated on throwing their conservative principles to the winds and so running the gauntlet to secure the German trade to the East. Undoubtedly they have been forced into this through the absence of export cargos from Britain, on account of labour troubles and other matters. However, such a line of procedure indicates that competition has really started, after a weary wait of over nine months, since the armistice. It is to be hoped that this will be kept within reasonable bounds, and not run mad, because the sooner the world gets to work again the world will be all the happier, and most of our ills will disappear like magic—when we stop having seven Sunday's to the week. This supreme initiative of the Eastern liners calling at European ports should also be a lead for the South African liners and tramps calling at some of the Continental ports, where immense cargoes are evidently awaiting shipment to all parts of the globe. Another

change of historical importance in Great Britain's fiscal policy took place on September 1st, with the coming into operation of the new Imperial preferential rates to its dominions and other parts of the British Empire. According to private cables a large number of Canadian boats were arriving at Liverpool to take advantage of the new preferential conditions.

AMERICAN AND CANADIAN COMPETITION.

In addition to the competition likely to come from Europe, we are already feeling that from Canada and America, in a small way at present perhaps, but there is sufficient to tell the tale. It stands to reason that as during the war, those countries did so well with their South African trade, they will not leave us alone, but come again with ever-increasing vigour. For example, Canada is sending us quantities of bar iron that is being offered below the Transvaal makers' prices of 28s. to 30s. per 100 lbs. for iron and 32s. 6d. to 35s. for mild steel. The Canadian iron has changed hands in Johannesburg at £25 per ton and even less. It is said that profits on bar iron and mild steel are less to-day in Johannesburg than for years past, as some kinds are distributed at only 19s. per ton profit. As regards our local manufacturers, there should be quite a fair margin to drop, as their present price is 28s. to 30s. per 100 lbs. for bar iron, as compared with 14s. 9d. in pre-war days. It may take a little time for South Africa to be flooded with material and merchandise, yet the indications given are more than sufficient to keep our manufacturers very much alive to the great trade war already commenced. At the various meetings of the Chambers of Commerce in all parts of South Africa all manner of nice things have been said in reference to assisting our manufacturers against dumping and so forth, but never a word or sound has been heard from our members of Parliament. One of the most important considerations is dumping, therefore similar authority might be given to a Cabinet Minister to that possessed by Sir Auckland Geddes in England, as previously explained. Unfortunately, our merchants are so much immured in their commissions that they are not always the best friends of the South African manufacturers, as they prefer selling over-sea goods, and it is mostly a secondary consideration to push the home-made product. The criticism in this respect is something to be passed on to their neighbours rather than taken to themselves.

TIMBER AND BUILDING MATERIALS.

The price of timber is much the same, with an increasing tendency, as much satisfaction is expressed that the builders and workmen will come to an understanding about the proposed new wages of 3s. 6d. per hour. Deals are 1s. 7d. and 1s. 8d. per foot; floorings, 8d. to 8½d.; ceilings, 6d. to 6½d. Roofing iron of 24 gauge is 1s. 3½d. to 1s. 1½d., but very scarce, as only small quantities are arriving from the coast. White lead, Canadian, is 67s. 6d. per 100 lbs., and British 10½d. per lb. Linseed oil is rising and quotations are erratic. The Indian raw is 87s. 6d. two-fours and 95s. for boiled. There is very little British in the market, and the only

quotation available is 17s. 6d. for an imperial gallon. Turps are 75s. for two-fours and 90s. ten-ones. Cement is very scarce indeed, partly through the shortage of railway trucks and partly because the manufacture is not so great on account of rearranging the machinery, which is an unavoidable occurrence. The second-hand timber and iron dealers are complaining of the delays in railway deliveries, more especially as the present congestion has lasted for a long time. It is causing not only annoyance but considerable dislocation to business, which will not be too bad, as enquiries are great, but in the absence of stocks, orders have to be hung up or passed altogether. The price of new iron in the yards is 1s. 5d. and good second-hand when obtainable is 1s.—1s. 2d. per foot. Second-hand deals are 1s. 4d. per foot.

COMMERCIAL EXCHANGE.

At the opening of the month the usual orders came along and seemed a little better, as the mines are replacing the absorption of reserve stores, therefore business should gradually increase from month to month. In addition to the indents for sorting-up lines there was some outstanding buying, as 200 tons of drill steel from one quarter and 2,000 dozen shovels from another were booked, both for forward delivery. The railway materials, arranged for by Sir William Hoy, are gradually arriving, but the Railway people are buying more through the Commercial Exchange, perhaps as a set-off against the quantities coming forward less commission, at least so far as South Africa is concerned. Olive oil from Spain and Portugal is 25s. to 27s. 6d. per gallon; some French is expected about the end of this month. The talk is that business throughout all circles may be classed rather on the dull side owing to a certain unrest over political matters, and in any case when Parliament meets it is never conducive to active business. Second-hand big logs of timber are very scarce indeed, therefore the price is advancing, and good stuff is dear. Lubricating and cylinder oils are up 4s. per case on account of the unfavourable exchange between here and New York, and they are now quoting in dollars instead of British currency. Steel-plates are 11s. 6d. 100lbs.; shovels, 61s. per dozen No. 2 round; carbide, 55s.; and lamps, 11s. Drill steel, 40d. a lb.; best imported mild steel, 5d. lb.; copper sheets, 3s., and brass rods 2s. 9d. per lb.

ELECTRICAL GOODS.

Business in town and country is reported as very brisk. One merchant reports that in country orders he is very busy, and has, in addition to Salisbury (Rhodesia), sent off to Elisabethville (Congo) some 10,000 feet of tubing at a very satisfactory price. Business on the Commercial Exchange is, however, not so good, as the mines are not buying, and when compelled to do so only order within narrow limits. Lamps remain at 20s. to 21s. wholesale, or 2s. retail, and this applies—with the exception of Osram lamps, which command a somewhat better price—to all the best grades.

"T.C.L. Reduction of Capital.

The following resolution was passed at the extraordinary general meeting of the "T.C.L." on the 20th inst.: "That the capital of the company be reduced from £1,000,000, divided into 1,000,000 shares of £1 each, whereof 971,214 are issued as fully paid and the remaining 28,786 are in reserve, to £728,110 10s., divided into 971,214 shares of 15s. each fully paid, and that such reduction be effected by cancelling the whole of the said 28,786 reserve shares, by returning to the holders of the 971,214 shares the sum of 5s. per share in cash, and by reducing the nominal amount of all the said 971,214 shares from £1 to 15s. each, and that the chairman for the time being of the company or of the confirmatory meeting be and he is hereby authorised to apply by petition to a competent court for confirmation of the said reduction."

Modderfontein East, Limited

(Incorporated in the Transvaal.)

Notice to Holders of Existing £200,000 Debentures and to Shareholders of the Company.

Issue of Further £300,000, 6½ per cent. Debentures.

NOTICE IS HEREBY GIVEN that in exercise of the power granted to them by resolutions of Shareholders passed at the Extraordinary General Meeting of Shareholders of this Company held on 15th May, 1919, the Directors have decided to make a further issue of Debentures at par for an amount of £300,000 sterling, ranking pari passu in point of security with the existing issue of £200,000 Debentures and carrying the following similar conditions:—

- (1) The issue bears interest at the rate of 6½ per cent. per annum, dating from 1st November, 1919, and is payable half-yearly on 31st January and 31st July in each year against presentation of the relative Interest Coupon.
- (2) Up to 31st July, 1921, Debenture Holders will have the right every six months at the due date of payment of Interest Coupon, to surrender their Debentures for conversion into shares of the Company, at the rate of one share of £1 for every £1 nominal value of Debentures, or alternatively (if not converted as above) the issue is redeemable on 31st July, 1921, at the rate of £105 for every £100 nominal value of Debentures.

In terms of the Resolutions passed at the Meeting above mentioned, the holders of the existing £200,000 Debentures have a preferent right to subscribe pro rata to their present Debenture holdings for the further £300,000 Debentures about to be issued, and in satisfaction of that right the issue of £300,000 Debentures is now offered in the first instance for subscription to holders of the Application Coupon attached to the Bonds issued in connection with the first series of £200,000 Debentures, and the holders thereof have the right to apply for £5 of this new issue for each £2 nominal value represented by the Bonds to which the said Application Coupons are attached, provided that if it be impossible for the amount applied for to be made up of the denominations of the Debenture Bonds to be issued, which are of £10, £25, £100 and £500 respectively, the nearest lower amount will be allotted. No excess application will be entertained.

The Application Coupon must be detached from the existing Debenture Bond and lodged with the official Application Form, which can be obtained at the Transfer Office of the Company, 4th Floor, The Corner House (P.O. Box 2058), Johannesburg, and which contains the necessary directions, and no applications will be considered unless this Application Coupon is surrendered as above provided.

Applications will be received at the Transfer Office of the Company on and after 13th October, 1919, and the list will be finally closed on 31st October, 1919, after which date the Application Coupon will cease to be effective and no further applications will be considered.

All applications must be accompanied by banker's draft or cheque at par, Johannesburg, for the full amount of the Debentures applied for.

Owing to the large premium at which the Debentures of this Company are now quoted on the Stock Exchange, it is anticipated that the whole of this further issue will be taken up by the holders of the Application Coupon above referred to, and consequently no application for Debentures from Shareholders of the Company will be at present considered.

Should, however, any considerable portion of this further issue of Debentures remain unapplied for, and should the Directors, in their sole discretion, consider the quantity sufficient to justify such a course, the balance unapplied for will be offered for subscription to Shareholders of the Company pro rata to shareholdings, and in that event notices will be posted to Shareholders registered on the books of the Company at the close of business on 31st October, 1919.

For full information regarding the financial position of the Company, as well as the progress of development operations, etc., at the mine, Debenture Holders are referred to the Directors' Annual Report and Statements of Account for the year ended 30th June, 1919, which have just been issued to Shareholders, and copies of which can be seen at, or obtained by application to, the Head Office.

The attention of Debenture Holders is directed to the following extract, regarding a reduction plan for this Company, quoted from the Directors' Report above mentioned:—

"The Directors are of opinion that the development position of the mine now warrants the erection of a milling plant. Steps are accordingly being taken to prepare the necessary plans and specifications for an ore reduction plant of an initial capacity of 40,000 tons per month, capable of extension, the ordering and subsequent erection of which will be proceeded with as rapidly as circumstances permit. Much of the machinery and material required will have to be imported from abroad, and Shareholders must realise that under the prevailing unsettled conditions extreme difficulty is experienced in obtaining certain essential items, and that considerable time may elapse before the plant can be put into commission."

By order of the Board.

RAND MINES, LIMITED, Secretaries,

Per C. C. BEAUMONT.

Head Office: The Corner House,
Johannesburg.
1st September, 1919.





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